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Japan International Cooperation Agency (JICA)

Hanoi People's Committee
Socialist Republic of Vietnam

The Study on Environmental Improvement for Hanoi City in The Socialist Republic of Vietnam

Technology Transfer Report

July 2000

Nippon Koei Co., Ltd.

EX Corporation

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TECHNOLOGY TRANSFER REPORT

Table of Contents

I. INTRODUCTION TO TECHNOLOGY TRANSFER REPORT

1.1 Objectives of Technology Transfer Report

The main objectives of the Technology Transfer Report are;

(i) Explain all the activities carried out by the JICA Study Team in cooperation of HPC, relevant Ministries and other organizations concerned with the environmental preservation and improvement of the Hanoi City, and

(ii) Propose possible human resource development (HRD) plans for the counterpart officials who worked with the JICA Study Team
Number of the counterparts for whom HRD plans are prepared totals 7 from 6 Departments/Authority as follows;
   i) Hanoi DOSTE
   ii) HAPI
   iii) Hanoi Chief Architect Office
   iv) TUPWS
   v) URENCO
   vi) HSDC

1.2 Composition of the Report

This Technology Transfer Report comprises the following 4 chapters;
(i) Introduction to Technology Transfer Report
(ii) On-the-job Training
(iii) Workshops
(iv) Human Resource Development Plan for the Counterparts

1.3 Manner and Activities of Technology Transfer Conducted in the Study

Manner and activities for technology transfer carried out by the JICA Study Team can be classified into the following two;
(i) On-the-job Training
(ii) Workshops and seminar

II. ON-THE-JOB TRAINING

The JICA Team comprises 14 members. All of them carried out on-the-job training to the counterparts in 2 way;
(i) Field survey and analysis
(ii) Individual or small group meetings for explanation and discussion for specific subject in relation to the environmental improvement and preservation

Altogether, 37 meetings were held for this purpose, technology transfer records for which are as per attached, Attachment A: Technology Transfer Records.

III. WORKSHOPS

Altogether, 15 workshops and a seminar were held with 19 different subjects. For these workshops and seminar, in total about 350 people participated, comprising counterparts, HPC officials, officials of the Ministries, Government organizations including Women's Union and Youth Union, NGO, aid organizations, foreign experts and others. Records of these workshops and seminar are per attached as Attachment B: Outlines of Workshops and Seminar

IV. HUMAN RESOURCE DEVELOPMENT PLAN FOR THE COUNTERPARTS

4.1 Objective of the Plan Formulation

Objective of the HRD plan is to provide appropriate HRD programs for each counterpart, considering his/her knowledge levels, past experience as well as the directions of the organizations to which they belong to, for HRD and their intention and job design for the future. HRD plan for each counterpart is worked out by each member of the JICA Study Team who worked with them.

4.2 Individual Plan for each Counterpart

HRD plans thus worked out are as per attached as Attachment C: Human Resource Development Plan.

Attachment A:

Technology Transfer Records

List of Technology Transfer Records

No.	Audience	JICA Study Team Members	Date
1	DOSTE	K. Sakaguchi	30 July. 1998
2	DOSTE	H. Wakasa	20 - 31 Aug. 1998
3	DOSTE	H. Wakasa	31 Aug. – 7 Sept 1998
4	DOSTE	H. Wakasa & M. Fujii	1 – 22 Sept 1998
5	DOSTE	H. Wakasa	28 Sept – 18 Oct. 1998
6	DOSTE	E. Delisle & M. Fujii	5 – 17 Oct. 1998
7	DOSTE	R. Everitt	10 Oct – 25 Nov 1998
8	DOSTE	K. Sakaguchi	19 Oct. 1998
9	DOSTE	K. Sakaguchi	21 Oct. 1998
10	DOSTE	M. Fujii	28 Oct. 1998
11	DOSTE, HAPI, TUPWS, URENCO	J. Warford	11 Dec. 1998
12	URENCO	K. Sakaguchi	25 July 1998
13	URENCO	Akagawa, Sakaguchi, Takahata, Soeda	12 Aug. 1998
14	URENCO	Tatakata & Soeda	18 Aug. 1998
15	URENCO	Tatakata & Soeda	19 Aug. 1998
16	URENCO	Tatakata & Soeda	20 Aug. 1998
17	URENCO	Tatakata & Soeda	21 Aug. 1998
18	URENCO	Tatakata & Soeda	22 Aug. 1998
19	URENCO	Tatakata & Soeda	24, 25 Aug. 1998
20	URENCO, CEETIA	Tatakata & Soeda	28 Aug. 1998
21	URENCO, CEETIA	Tatakata & Soeda	8 Sept. 1998
22	URENCO	Naito & Soeda	16 Sept. 1998
23	URENCO	T. Naito	18,19,22,25 Sept. 1998
24	URENCO	Naito & Soeda	24 Sept. 1998
25	URENCO	S. Soeda	3 Oct. 1998
26	URENCO	K. Sakaguchi	18,27 Nov. 1998
27	URENCO	K. Sakaguchi	25 Sept 1999
28	HAPI	R. Everitt	10 Oct – 21 Nov 1998
29	HAPI	R. Everitt	23 Oct – 1 Nov 1998
30	HAPI	A. Watanabe	28 Oct, 1998
31	MPI	R. Everitt	15 Oct – 17 Nov 1998
32	MPI, Vietnam Industrial Zone Authority, MOSTE	R. Everitt	27 Oct – 10 Nov 1998
33	TUPWS, DOSTE	K. Sakaguchi	11 June 1999
34	TUPWS, VIWASE	K. Sakaguchi	18 June 1999
35	HSDC	H. Wakasa & M. Fujii	1 Sept – 29 Oct 1999
36	MOSTE	J. Warford	29 Sept. 1999
37	Women's Association	D. Williams	1 Oct. 1999

Record for Transfer of Technology (No.1)

Date	30 July 1998	Place	DOSTE office
Audience	Participants of the Inception report meeting including: -DOSTE: Mr. Lam, Director, Project Management Board -HAPI: Mr. Nam, Director, Foreign ODA section -URENCO: Mr. Chun, president		
Team Members	Kiichiro Sakaguchi (Solid waste management planner)		
Theme and Objectives	Location of Landfill site: The objective was to show how costly to select Nam Son as a site for landfill.		
Methodology	Explanation and discussion were conducted on the following topic: -inter-municipal arrangement -comparison of cost of waste transport between Nam Son and Tay Mo landfill site.		
Materials Used	A note prepared by Sakaguchi was used.		

Record for Transfer of Technology (No.2)

Date	: Aug.20 - 31, 1998	Place	: DOSTE's office & Sites
Audience	: Eng. Nguyen Hang Khoi (Environmental specialist) Eng. Dang Duong Binh (Vice director)		
Team Members	: H. WAKASA		
Theme	: Selection of water sampling points & water quality parameters in order to establish the water quality monitoring system		
Methodology	: (1) Interview & Discussion on the existing water pollution problem and water quality monitoring system, and on ideas for establishment of the future water quality monitoring system (2) On the job training to Mr.Khoi during site inspection (3) Participation in the preparation of technical specification for water quality analysis (4) Introduce of the water quality monitoring system and water quality parameters in Japan		
Materials Used	: (1)Report of the Hanoi Urban Drainage and Wastewater Disposal System Master Plan formulated in 1995 by JICA (2) The technical specification for water quality analysis (3) Topographical map to be clarified the drainage areas (4) Quality of the environment in Japan 1995 (5) Tokyo environmental management plan 1987		

Record for Transfer of Technology (No.3)

Date	: Aug.31 – Sep.7, 1998	Place	: DOSTE's office & Sites
Audience	: Eng. Nguyen Hang Khoi (Environmental specialist) Eng. Dang Duong Binh (Vice director) Staff members of the Institute of Chemistry		
Team Members	: H. WAKASA		
Theme	: Selection of air sampling points and air quality parameters in order to establish the air quality monitoring system		
Methodology	: (1) Interview & Discussion on the existing air pollution problem and air quality monitoring system, and on ideas for establishment of the future air quality monitoring system (2) On the job training during site inspection (3) Participation in the preparation of technical specification for air quality survey (4) Introduce of the air quality monitoring system and air quality parameters (VCEP)		
Materials Used	: (1)Report of the Hanoi Traffic System Master Plan formulated in 1997 by JICA (2) The technical specification for air quality survey (3) The manual book of air sampler supplied by JICA		

Record for Transfer of Technology (No.4)

Date	: Sep.1 - 22, 1998	Place	: DOSTE's office & Sites
Audience	: Eng. Nguyen Hang Khoi (Environmental specialist) Staff members of the Institute of Chemistry for water sampling assistants		
Team Members	: H. WAKASA M. FUJII		
Theme	: Water sampling method for water quality survey		
Methodology	:(1)Guidance for water sampling method with means of using the guideline of water sampling and the technical specification of water quality analysis (2) On the job training during water sampling works (3) Proposing the working groups and working schedule		
Materials Used	: (1) The technical specification for water quality analysis (2) The guideline of water sampling (3) Working schedule		

Record for Transfer of Technology (No.5)

Date	: Sep.28 – Oct.18, 1998	Place	: DOSTE's office & Sites
Audience	: Eng. Nguyen Hang Khoi (Environmental specialist) Eng. Dang Duong Binh (Vice director) Staff member of the Institute of Chemistry for survey assistants		
Team Members	: H. WAKASA		
Theme	: (1)Selection of noise & vibration survey points & evaluation parameter (dB) in order to establish the noise & vibration monitoring system (2)Analysis and evaluation method		
Methodology	: (1) Interview & Discussion on the existing noise & vibration problem and noise & vibration monitoring system, and on ideas for establishment of the future noise & vibration monitoring system (2) On the job training during site inspection and measure (3) Participation in the preparation of guideline for noise & vibration measure and analysis (4) Introduce of the noise & vibration monitoring system and evaluation parameter in Japan		
Materials Used	: (1)Standard of noise & vibration in Japan (2) The guideline for noise & vibration (3) Technology and regulation for pollution protection in Japan		

Record for Transfer of Technology (No.6)

Date	: Oct.5 – 17, 1998	Place	: DOSTE's office & Sites
Audience	: Eng. Nguyen Hang Khoi (Environmental specialist) Staff members of the Institute of Chemistry		
Team Members	: E.DELISLE M.FUJII		
Theme	: Methods of using the air sampler supplied by JICA and setting up the air sampler at sites		
Methodology	: (1) On the job training during site work (2) Instruction with using the manual book of the air sampler supplied by JICA		
Materials Used	: (1) The manual book of air quality sampler supplied by JICA		

Record for Transfer of Technology (No.7)

Date	:October 10, 1998 to November 25, 1998	Place	: Hanoi Department of Science Technology and Environment (DOSTE)
Audience	: Dr. Lam – Hanoi DOSTE Mr. Hai – Hanoi DOSTE		
Team Members	: R. EVERITT		
Theme	: Institutional arrangements and capacity building in environmental management division of the Hanoi DOSTE		
Methodology	: (1) Interview & Discussion on the existing environmental management system in Hanoi (2) Comments on proposal to create an environmental agency within the Hanoi DOSTE (3) Exchange of views on technology transfer mechanisms used by different donors (4) Advice on the content and approach to strengthen monitoring and industrial pollution control capacity in DOSTE		
Materials Used	:		

Record for Transfer of Technology (No.8)

Date	October 19 1998	Place	DOSTE office
Audience	-DOSTE: Mr. Lam, Director, Project Management Board		
Team Members	Kiichiro Sakaguchi (Solid waste management planner)		
Theme and Objectives	Household survey concerning Environmental Awareness The objective was to show sample household selection method and questionnaire to conduct an effective survey.		
Methodology	Face to face meeting was held with Dr. Lam, director of the PMB. The discussion covered the following topics, objective of the survey, sampling method, questionnaire.		
Materials Used	Prior to the discussion, Sakaguchi prepared a reference documents showing sample households and questionnaire.		

Record for Transfer of Technology (No.9)

Date	October 21 & November 3 1998	Place	DOSTE office & sites tour
Audience	Representatives from the following offices of HPC: -DOSTE: Mr. Lam, Director, Project Management Board -Chief Architect Office: Mr. Tuan, deputy director -TUPWS: Mr. Sung, manager, investment planning division -HAPI: Mr. Nam, manager of international aid section -URENCO: Mr. Duc, technical section -Mr. An, deputy chairman, HPC		
Team Members	Kiichiro Sakaguchi (Solid waste management planner)		
Theme and Objectives	Selection of transfer station The objective was to show criteria and evaluation method applied in selecting sites for waste transfer station.		
Methodology	On 21 October 1998, a meeting was held in the morning to explain the criteria for site selection. In the afternoon, all the participants visited sites which have been identified previously. Later, the participants discussed the advantage and disadvantage of respective sites. On 3 November 1998, the second meeting was held in an attempt to finalize the sites.		
Materials Used	Prior to the meeting of 21 October, Sakaguchi prepared a reference material "Planning of Transfer Station – Reference Document for Joint Meeting". This reference document was used. For the second meeting. Sakaguchi prepared a reference material "Report on Selection of the Location of Waste Transfer Stations" This report was also used to explain the advantages and disadvantages of respective sites.		

Record for Transfer of Technology (No.10)

Date	: Oct. 28, 1998	Place	: DOSTE Laboratory
Audience	: Dr. Tran Thi Kim (Loan Analytical Chemical, DOSTE) Ms. Tran Thi Kim Thanh (Analytical Chemical, DOSTE) Mr. Nguyen Quang (Chemist, DOSTE)		
Team Members	: Mr. Fujii		
Theme	: Water sampling method for water quality survey		
Methodology	:(1)Guidance for water sampling method with means of using the guideline of water sampling and the technical specification of water quality analysis (2) On the job training during water sampling works (3) Proposing the working groups and working schedule		
Materials Used	: (1) The technical specification for water quality analysis (2) The guideline of water sampling (3) Working schedule		

Record for Transfer of Technology (No.11)

Date	11 Dec 98	Place	Army Hotel, Hanoi
Audience	20 (DOSTE-8, HAPI-4, TUPWS-2, URENCO-1, Others-5)		
Team Members	J. Warford Economist		
Theme & Objectives	Use of economic analysis for setting environmental priorities and creating incentives for efficient and equitable environmental resource use.		
Methodology	Lectures/workshop on valuation methods and the role of economic incentives in environmental management, with illustrations from methods used in industrialized countries, in particular emphasizing the administrative and practical feasibility of alternative approaches.		
Materials Used	Presentations, as well as individual discussions, based upon the following material: (1) "World Without End: Economics, Environment, and Sustainable Development", D. Pearce and J. Warford, World Bank, 1993 (2) "The Greening of Economic Policy Reform", J. Warford et al, World Bank,1997 Copies of the above have subsequently been sent to HAPI and to the Vietnam Chamber of Commerce.		

Record for Transfer of Technology (No.12)

Date	: 25 July 1998	Place	: JICA office
Audience	URENCO: Ms. Hang, head of International department Ms. Ha, staff		
Team Members	Mr. Shugo Soeda Kiichiro Sakaguchi		
Theme	Household waste generation survey method		
Methodology	1. Presentation by the Study Team member 2. Discussions The Study Team presented a paper showing methods and specifications of the survey, and explained in detail.		
Materials Used	We prepared and used a paper that shows a plan for the waste generation survey		

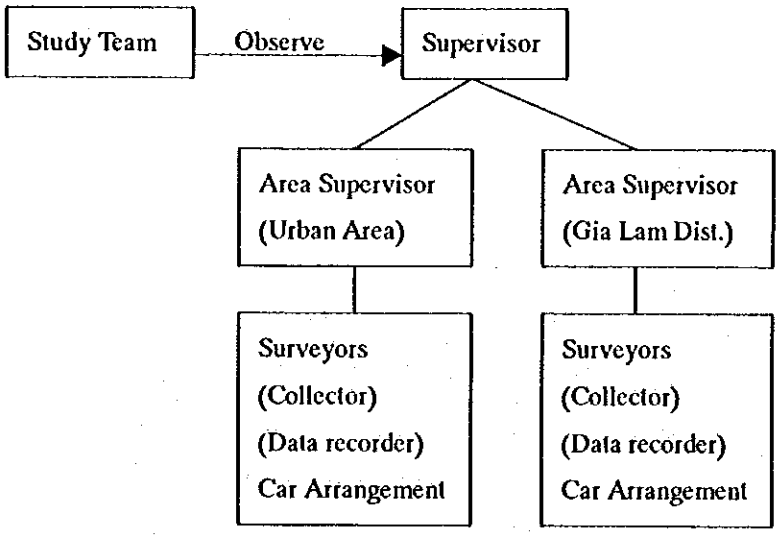
Record for Transfer of Technology (No.13)

Date	: August 12, 1998	Place	: URENCO
Audience	: Ms. Vu Thu Ha, Mr. Duong Ngoc Hoan (URENCO)		
Team Members	: Mr. Akagawa, Mr. Sakaguchi, Mr. Takahata, Mr. Soeda Mr. Viet, Ms. Anh (local team staff)		
Theme	: Household waste generation survey		
Methodology	: The study team explained how to measure and estimate the household waste generation quantity with TOR. Especially the following major survey points were emphasized. 1) Household categorizing Survey point shall be divided into several areas which can show the characteristic of residents such as income level and hosing type. 2) Quantity estimation It was instructed how to estimate the total generation quantity, what kind of statistic data will be used. 3) Survey days and time Survey shall be done for 8days continuously and the data of first day shall be ignored in order to get more precise estimation. It had better to collect the sample in the morning because of avoiding to dispose it by accident. 4) Sample collection method It was instructed that plastic bags should be used for collecting the sample waste from each household. Also instructed different color bags shall be used for each sampling area and each bag should be numbered.		
Materials Used	Terms of Reference for Household Waste Generation Survey		

Record for Transfer of Technology (No.14)

Date	: August 18, 1998	Place	: Gia Lam People's committee
Audience	: Mr. Nguyen Van Trinh (vice chairman of Gia Lam People's Committee) Ms. Quach Thi Lam, Mr. Nguyen Huy Nam, Ms. Huynh Thu Hien (Gia Lam Environmnetal Company) Ms. Vu Thu Ha, Mr. Duong Ngoc Hoan (URENCO)		
Team Members	: Mr. Takahata, Mr. Soeda Mr. Viet, Ms. Anh (local team staff)		
Theme	: Household waste generation survey (part 3 in Gia Lam)		
Methodology	: The team explained the purpose and procedure of the survey to the representatives of Gia Lam District. The team also instructed the survey methods to the member of Gia Lam Environmental Company who would be in charge of collecting the samples in Gia Lam. 1) Sampling Area URENCO, Gia Lam Environmental Company and the team discussed the selection of most appropriate sampling household categories and areas for the survey, and finalized as follow. Sampling Area C1: 20 samples: Urban commuters and small business household Sampling Area C2: 10 samples: Full time farmer Sampling Area C3: 10 samples: Farmer involved some traditional work 2) Other The team suggested the local authority to tell the residents to keep all kind of waste for the survey not to dispose some organic matters to open land as usual.		
Materials Used	Terms of Reference for Household Waste Generation Survey		

Record for Transfer of Technology (No.15)

Date	: August 19, 1998	Place	: URENCO
Audience	: Ms. Vu Thu Ha, Mr. Duong Ngoc Hoan (URENCO)		
Team Members	: Mr. Takahata, Mr. Soeda Mr. Viet, Ms. Anh (local team staff)		
Theme	: Household waste generation survey (part 4)		
Methodology	: The team prepared the survey data record sheet and explained how to use it to URENCO. The team also requested URENCO to keep not only the number of residents at each family but also their age and sex because it might be the useful information if more detailed analysis was necessary. The team also instructed the practical organization for the survey as follow.  		
Materials Used	Terms of Reference for Household Waste Generation Survey Data sheet		

Record for Transfer of Technology (No.16)

Date	: August 20, 1998	Place	: URENCO
Audience	: Ms. Nguyen Thi Hoang Lan, Ms. Vu Thu Ha, Mr. Duong Ngoc Hoan (URENCO)		
Team Members	: Mr. Takahata, Mr. Soeda Mr. Viet (local team staff)		
Theme	: Household waste generation survey (part 5)		
Methodology	: Sampling points in urban area were finalized by URENCO and the Study team as follow. URENCO and the Study Team visited all area t confirm its validity. Area A: Governmental housing: 20 sample: Khuong Trung (Dong Da) Area B1: Private housing (old urban area): 20 sample: Hang Bo (Hoan Kiem) Area B2: Private housing (new urban area): 20 samples: Thuy Khue (Tay Ho) : The team recommended to use not only the spring balance for 10kg load but also tray balance for 5kg load for measuring wide range of collected wastes. : The team confirmed color and shape of plastic bags used for the survey.		
Materials Used	Terms of Reference for Household Waste Generation Survey Data sheet		

Record for Transfer of Technology (No.17)

Date	: August 21, 1998	Place	: Gia Lam District
Audience	: Ms. Huynh Thu Hien (Gia Lam Environmental Company) Ms. Vu Thu Ha, Mr. Duong Ngoc Hoan (URENCO)		
Team Members	: Mr. Takahata, Mr. Soeda Ms. Hang, Mr. Viet (local team staff)		
Theme	: Household waste generation survey (part 6 in Gia Lam)		
Methodology	: Sampling area in Gia Lam was visited and collecting route was confirmed. The team also visited the community leader and discussed about the survey. The team explained to Gia Lam surveyor how to record the data sheet.		
Materials Used	Terms of Reference for Household Waste Generation Survey Data sheet		

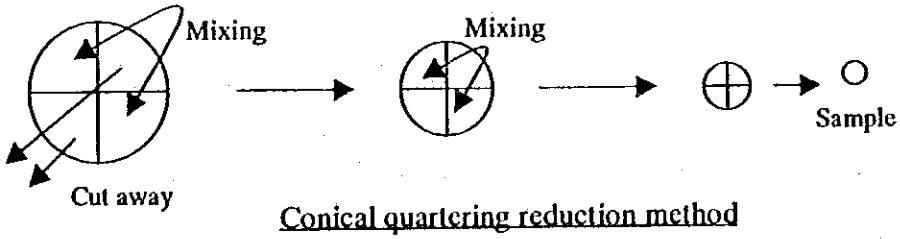
Record for Transfer of Technology (No.18)

Date	: August 22, 1998	Place	: URENCO
Audience	: Ms. Vu Thu Ha, Mr. Duong Ngoc Hoan (URENCO)		
Team Members	: Mr. Takahata, Mr. Soeda Ms. Hang (local team staff)		
Theme	: Household waste generation survey (part 7)		
Methodology	: Final confirmation of the survey. Survey schedule was discussed and confirmed as follows. The study team will observe the survey on first and second day. - August 24 (Mon): Takahata→Urban area, Soeda→Gia Lam - August 25 (Tue): Takahata→Gia Lam, Soeda→Urban Area Waste quality analysis (part one: 3 samples) will be done one day during the survey. The team instructed the activity for this quality survey.		
Materials Used	Terms of Reference for Household Waste Generation Survey Additional activity for waste quality analysis during quantity survey		

Record for Transfer of Technology (No.19)

Date	: August 24-25, 1998	Place	: Urban area and Gia Lam
Audience	: Ms. Huynh Thu Hien (Gia Lam Environmental Company) and surveyors Ms. Vu Thu Ha, Mr. Duong Ngoc Hoan (URENCO) and surveyors		
Team Members	: Mr. Takahata , Mr. Soeda		
Theme	: Household waste generation survey (part 8)		
Methodology	- August 24 (Mon): Takahata→Urban area, Soeda→Gia Lam - August 25 (Tue): Takahata→Gia Lam, Soeda→Urban Area Team member instructed the survey practically as follows. - How to measure the weight of plastic bag - How to keep the record of the data and its precision - Effective collecting and measuring way - Discussing the composition of waste in plastic bags - Importance of the communication between surveyor and residents		
Materials Used	Terms of Reference for Household Waste Generation Survey Data sheet		

Record for Transfer of Technology (No.20)

Date	: August 28, 1998	Place	: CEETIA
Audience	: Ms. Nguyen Kim Thai, Ms. Nguyen Thu Huyen, Ms. Tran Hien Minh (CEETIA) Ms. Huynh Thu Hien, Mr. Truong Hoai Nam (Gia Lam Environmental Company) Ms. Vu Thu Ha, Mr. Duong Ngoc Hoan, Ms. Nguyen Hong An, Mr. Tuan, Mr. Hai (URENCO)		
Team Members	: Mr. Takahata , Mr. Soeda, Ms. Hang		
Theme	: Household waste quality analysis (part 1)		
Methodology	The purpose of this opportunity is to show the waste quality analysis, physical sorting and measuring, to URENCO's engineer in cooperation with CEETIA which is the implementation organization of the analysis. The study team instructed the conical quartering reduction method, and how to measure the bulk density.  Conical quartering reduction method		
Materials Used	Terms of Reference for Waste Quality Analysis Sorting tools for physical analysis on wet base (CEETIA)		

Record for Transfer of Technology (No.21)

Date	: September 8, 1998	Place	: Tay Mo Landfill Site
Audience	: Ms. Nguyen Kim Thai, Ms. Nguyen Thu Huyen, Ms. Tran Hien Minh (CEETIA) Ms. Vu Thu Ha, Mr. Duong Ngoc Hoan, Ms. Nguyen Hong An, Mr. Tuan, Mr. Hai (URENCO)		
Team Members	: Mr. Takahata , Mr. Soeda, Ms. Phuong		
Theme	: Household waste quality analysis (part 2: from collecting vehicles)		
Methodology	The purpose of this opportunity is to show the waste quality analysis, physical sorting and measuring from collecting vehicles, to URENCO's engineer in cooperation with CEETIA which is the implementation organization of the analysis. The study team instructed the conical quartering reduction method using a heavy machine in bulk and using manpower in small portion. It was discussed the relationship between the composition of sample from each truck and their collecting route.		
Materials Used	Terms of Reference for Waste Quality Analysis Sorting tools		

Record for Transfer of Technology (No.22)

Date	: September 16, 1998	Place	: URENCO
Audience	: Ms. Vu Thu Ha, Mr. Duong Ngoc Hoan, Mr. Pham Van Duc, Mr. Hoang Anh Tuan (URENCO)		
Team Members	: Mr. Naito , Mr. Soeda, Ms. Giang		
Theme	: Household waste collection quantity survey (part 1)		
Methodology	- The team explained the purpose of collection quantity survey: Measuring the weight/volume of the waste transported and disposed into Tay Mo landfill site in order to compare with the waste generation quantity which estimated from the generation quantity survey and estimate the waste collection ratrio. - URENCO and the team discussed about the Tay Mo weigh bridge condition, data recording, survey period and organization.		
Materials Used	Terms of Reference for Waste Quality Analysis Sorting tools		

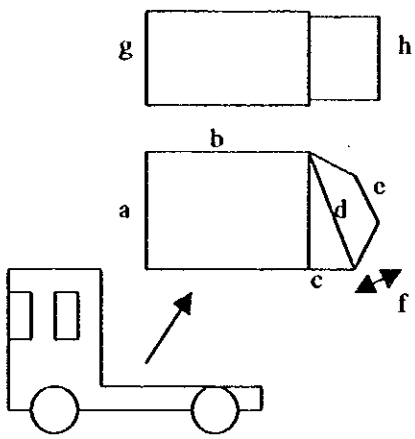
Record for Transfer of Technology (No.23)

Date	September 18,19,22,25	Place	Field (Hanoi)
Audience	Mr. Doc (staff of technical division of URENCO) for all the days Mr. De (Head of URENCO No.2 Gia Lam District) only on September 22		
Team Members	Toru Naito (Land use & Urban planning)		
Theme & Objectives	Criteria on the site selection for a facility of waste management - Process of the site selection for transfer stations by field survey		
Methodology	1) To discuss how to set criteria consist of location (distance), access road, current & future land use of the site and surroundings, land use right, soil condition, flood history, etc. 2) To pick up possible locations on map 3) To carry out field survey on the locations 4) To analyze survey result and appraise each locations		
Materials Used	1) Topographical map of Hanoi (1/10,000) , Cartographic Distributing Center, 1986 2) Current Land Use Map of Hanoi (1/50,000), Cartographic Distributing Center,1998 3) Current disposal sites plan maps on Tay Mo and Lam Du (1/1,000), URENCO made, 1997		

Record for Transfer of Technology (No.24)

Date	: September 24, 1998	Place	: Tay Mo Landfill Site
Audience	: Ms. Vu Thu Ha, Mr. Hoang Anh Tuan (URENCO)		
Team Members	: Mr. Naito , Mr. Soeda, Ms. Giang		
Theme	: Household waste collection quantity survey (part 2)		
Methodology	The team visited Tay Mo Landfill Site in order to check the incoming waste quantity control system because the broken weigh bridge was fixed. The team requested URENCO to keep the collection quantity data as follows. - Transfer vehicle number, its collecting area and route and the type of waste hauled - Trip number of each vehicle and its enter time - Weight of vehicle with the waste - Blank weight of vehicle		
Materials Used	none		

Record for Transfer of Technology (No.25)

Date	: October 3, 1998	Place	: URENCO Unit 2
Audience	: Mr. Duong Ngoc Hoan (URENCO)		
Team Members	: Mr. Soeda,		
Theme	: Measuring the small compactor size		
Methodology	There is no specification and drawing of the small compactor of URENCO, second-hand vehicle from Osaka prefecture in Japan, which shows the capacity (m3) of the container. Thus the team member measured the size of container and caluculated the volume capacity. RESULT:  a: 1.2 m b. 1.92 m c: 0.3 m d: 1.15 m e: 0.25 m f: 0.3 m g: 1.67 m h: 1.31 m V=(a*b*g)+(c*a/2*g)+((d+e)/2*f*h = 4.43 m3 This data will be used to estimate the bulk density in car of the waste quality survey carried out on September 8 at Tay Mo.		
Materials Used	Measuring scale, calculator		

Record for Transfer of Technology (No.26)

Date	18 & 27 November 1998	Place	URENCO office
Audience	Staff of URENCO including: Mr. Chun, president Mr. Duc, technical section Mis. Ha, international section		
Team Members	Kiichiro Sakaguchi (Solid waste management planner)		
Theme and Objectives	Planning Conditions for a Waste Transfer Station: The objective was to show what kinds of matters have to decided or planned for designing of a transfer station.		
Methodology	In two meetings held on 28 and 27 November, Sakaguchi explained what matters have to be decided or planned or assumed before designing of a transfer station. Later, appropriateness of specific planning conditions were discussed.		
Materials Used	Prior to the discussion, Sakaguchi prepared a reference documents containing preliminary planning conditions.		

Record for Transfer of Technology (No.27)

Date	: 25 September 1999	Place	: URENCO office
Audience	URENCO: Ms. Chung, director Hang, head of international department Ms. Ha, staff		
Team Members	Kiichiro Sakaguchi		
Theme	Direct waste collection system vs indirect (double handling) waste collection system		
Methodology	1. Presentation by the Study Team member 2. Discussions The Study Team presented a paper showing cost comparison between the direct collection system and the double handling system that is currently applied by URENCO.		
Materials Used	We prepared and used a paper that shows the cost comparison between the two systems in question.		

Record for Transfer of Technology (No.28)

Date	:October 10, 1998 to November 21, 1998	Place	:Hanoi Authority for Planning and Investment
Audience	: Mr Nam -- Hanoi Authority for Planning and Investment		
Team Members	: R. EVERITT		
Theme	: Methodology for economic evaluation of environmental investment projects		
Methodology	: (1) Discussions on the approaches for economic evalutaion of environmental investment project (2) Preliminary planning for seminar or future technical assistance on economic evaluation of environmental investment projects		
Materials Used	:		

Record for Transfer of Technology (No.29)

Date	:October 23, 1998 to November 11, 1998	Place	:Hanoi Authority for Planning and Investment
Audience	: Mr Nam – Hanoi Authority for Planning and Investment		
Team Members	: R. EVERITT		
Theme	: Methodology for economic evaluation of environmental investment projects		
Methodology	: (1) Continued discussions on the approaches for economic evalutaion of environmental investment project (2) Researched and obtained two international publications • Guidelines for the Economic Analysis of Projects • Handbook for the Economic Analysis of Water Supply Projects These publications provide good information on economic analysis and contain techniques that are suitable for evaluation of environmental improvement projects. (3) Preparation of proposal future technical assistance on economic evaluation of environmental investment projects		
Materials Used	: Textbooks		

Record for Transfer of Technology (No.30)

Date	Oct. 28,1998	Place	HAPI Office
Audience	- Mr. Vu Kim Nam (HAPI Department of International Loan) - Mr. Nguyen Van Phuc (HAPI Department of International Loan)		
Team Members	- Akifumi Watanabe (Macro frame)		
Theme & Objectives	Economic growth projection in Hanoi Since the economic growth for 1997-2020 for Hanoi described in the Hanoi Urban Master Plan 2020 is too high and the effect of Asian economic crisis is not integrated, the projection needed to be revised. The purpose of the technology transfer is to discuss the economic growth projection in Hanoi.		
Methodology	Technology transfer was carried out mainly by free discussion with the staff of HAPI. Discussed items are summarized below. (1) Economic growth projection in Hanoi Urban Master Plan 2020 Review the planned economic growth and discuss the effect of Asian crisis on the Vietnam economy (particularly investment, industry). (2) Economic project projection done by the other agencies Some studies have been conducted by other agencies after the Asian crisis. There was a discussion of validity of the study.		
Materials Used	(1) Hanoi Urban Master Plan 2020 (HPC) (2) Economic indicator (JICA Study Team) Table 1, Table 2. Prepared from the Vietnam National Plan and International Financial Statistics (IMF)		
Result	- Staff of HAPI understands the economic projection in the Hanoi Urban Master Plan is high and there is a need for revision. Later, he prepared the unofficial revised projection (lower projection). - He was interested in how Japanese economy grew. There was a small lecture on how the Japanese economy grew and present condition of Japanese economy.		

Record for Transfer of Technology (No.31)

Date	:October 15, 1998 to November 17, 1998	Place	:Ministry of Planning Investment Offices
Audience	: Mr. Pham Hai - Department of Local Government --MPI Mr Ho -- DSI - MPI Mr Quyen -- General Department of MPI Mr. Phan Doanh -- Department of Agriculture and Rural Development -- MPI Mr. Duc -- Department of Science -- MPI		
Team Members	: R. EVERITT		
Theme	: Integrating environmental considerations in socio-economic development strategy formulation		
Methodology	: (1) Interview & Discussion on the existing procedures for preparing socio-economic development strategy in Vietnam (2) Exchange of opinions on the capacity of existing state environmental management agencies (3) Exchange of opinions of Government of Vietnam Strategy for controlling industrial pollution (4) Exchange of opinions about environmental situation in Hanoi and efforts by MPI to incorporate environmental considerations in setting of socio-economic development strategy		
Materials Used	: (1) Official Government of Viet Nam reports on socio-economic development strategy (2) Reports of UNDP funded Capacity 21 Project		

Record for Transfer of Technology (No.32)

Date	:October 27, 1998 to November 10, 1998	Place	: Ministry of Planning and Investment Vietnam Industrial Zone Authority Seminar on Sustainable Environmental Development in Industrial Zones Ministry of Science Technology and Environment (MOSTE)
Audience	: Mr. Ngo Van Diem Viet Nam Industrial Zone Authority Mr. Phuc Department of Industrial Zone Development - MPI Seminar on Environmental Sustainable Development in Industrial Zone Mrs. Chu Thi Sang - MOSTE		
Team Members	: R. EVERITT		
Theme	: Formulation of regulations on environmental management of industrial zones		
Methodology	: (1) Interview & Discussion on the existing environmental management of industrial zones (2) Exchange of views at Seminar on Environmental Sustainable Development in Industrial Zone (3) Advice on the content and approach to development of environmental management regulations for industrial zones		
Materials Used	: (1) Invited papers for Seminar on Environmental Sustainable Development in Industrial Zone (2) UNIDO Documents on Industrial Pollution Control		

Record for Transfer of Technology (No.33)

Date	: 11 June 1999	Place	: TUPWS office
Audience	TUPWS: Mr. Quang, deputy director Mr. Son, staff Mr. Minh, staff DOSTE: Mr. Khoi Ms. Chi VIWASE: Mr. Duc		
Team Members	Mr. Kiichiro Sakaguchi Mr. Iwasa		
Theme	1. Mode of the secondary transport of waste: choices between the road transport and railway transport 2. Route of the secondary transport		
Methodology	1. Presentation by the Study Team member 2. Discussions The Study Team presented some reference materials, and explained the subject matters. VIVASE also made some presentation based on the report they prepared. Later, the both the study team members and the counterparts exchanged ideas, and reached to share some conclusions.		
Materials Used	We prepared and used some reference materials on the following topics: 1. Roads and bridges on the routes from Dong Ngac transfer station to Nam Son Landfill Site 2. Roads and bridges that need to be upgraded 3. Economic comparison between the west route and east route		

Record for Transfer of Technology (No.34)

Date	: 18 June 1999	Place	: TUPWS office
Audience	TUPWS: Mr. Son, staff Mr. Minh, staff VIWASE: Mr. Duc		
Team Members	Mr. Kiichiro Sakaguchi Mr. Iwasa		
Theme	1. Waste transfer system options 2. Improvement needs of secondary transport route (west route)		
Methodology	3. Presentation by the Study Team member 4. Discussions The Study Team presented some reference materials, and explained the subject matters. Later, the both the study team members and the counterparts had a detailed and close discussion.		
Materials Used	We prepared and used some reference materials on the following topics: 1. Illustrative figures showing different systems for waste transfer 2. cost comparison between waste transfer system options 3. Suitable types of vehicles based on the road conditions		

Record for Transfer of Technology (No.35)

Date	: Sep.1 – Oct.29, 1999	Place	: Office of DOSTE & HSDC, & Sites
Audience	: MSc. Phan Hoai Minh (Deputy Head of Science & Technique Section, HSDC)		
Team Members	: H. WAKASA M. FUJII		
Theme	: - Sewerage development planning - Workshop presentation - Method on preparation of TOR for the Study on wastewater disposal system in Hanoi		
Methodology	:(1)Guidance for the sewerage development planning method with means of using the guideline and the technical specification of sewerage planning (2) On the job training during site inspection and deskwork (3) Presentation of the sewerage development planning at the Workshop (4) Guidance for preparation of TOR on the Study		
Materials Used	: (1) The technical specification and standard for sewerage in Japan (2) The guideline of sewerage planning (3) JICA application form of technical assistance (4) Previous JICA report (3) Working schedule		

Record for Transfer of Technology (No.36)

Date	: 29 September 1999	Place	: MOSTE
Audience	MOSTE Mr. Thang, Director, Industrial Pollution Control Department Mr. Le Chang Thi, a staff, Industrial Pollution Control Department		
Team Members	Dr. Jeremy J. Warford (in charge of socio-economic analysis) Mr. Kiichiro Sakaguchi (solid waste management plan)		
Theme	Funding of Environmental Programs		
Methodology	3. Presentation by the Study Team member 4. Discussions The Study Team gave a short lecture on options (methods) for raising funds for environmental protection, and later had close discussion with the participants.		
Materials Used	Dr. Warfoford delivered books on economic tools for pollution control, and relevant reports.		

Record for Transfer of Technology (No.37)

Date	: 1 October1999	Place	: Office of Hanoi Women's Union
Audience	Hanoi Women's Union Ms. Tran Thi Kim Loan Ms. Nguyen Thi Van Ha Ms. Luu Thanh Chi		
Team Members	David G. Williams (in charge of Environmental Education and Awareness Raising)		
Theme	Environmental Education Materials		
Methodology	5. Showing video programs on environmental awareness 6. Discussions Mr. David G. Williams showed the participants a few video programs for environmental education and awareness raising, and gave a lecture on the effectiveness of each video program shown.		
Materials Used	Video tapes and some reference books.		

Attachment B:

Outlines of Workshops and Seminar

List of Workshops Held by the JICA Study Team

No.	Date	Topics	Presentator
B-1	**Institution**		
1	2 Nov1999	Institutional Development for Environmental Management	Akagawa, Everitt, Vo Kim Son
2	10 March 2000	Institutional Recommendations from the JICA Study on Environmental Improvement in Hanoi	Robert Everitt
B-2	**Environmental Awareness Raising and Education**		
3	15 October 1998	Environmental awareness and education in Hanoi	David G. Willimas
4	30 September 1999	Environmental education and awareness	David G. Williams
B-3	**Solid Waste Management**		
5	19 December 1998	Waste transfer station location and sanitary landfill system	Sakaguchi & Takahata
6	21 July 1999	Plan for Nam Son landfill site	Soeda, Takahata
7	17 August 1999	Waste Disposal Method Options	Sakaguchi
8	17 August 1999	Recycling from municipal solid waste	Soeda
9	27 October 1999	Waste transport using railway	Takahata
10	9 March 2000	Solid waste management improvement plan	Kiichiro Sakaguchi
B-4	**Water Environment, Air, Noise and Environmental Zoning, Septage Management**		
11	16 October 1998	Zoning for Environmental Management Plan & Water Pollution Control	T. Watanabe, T. Naito, M. Fujii, N.MChuong
12	26 Oct 1999	Public Sewerage Development Plan & Prediction of Water Quality	H.Wakasa, M.Fujii, N.D.Khoi, P.H.Minh
13	4 November 2000	Septage management	Despault
14	10 March 2000	Water, air and noise	Wakasa
B-5	**Economy**		
15	18 December 1998	Economic Evaluation of Investments Projects and Economic Incentives Approach for Environmental Protection	Jeremy Warford
B-6	**Technology Transfer Seminar**		
16	13 March 2000	Technology transfer seminar	Masatoshi Akagawa

B-1 Institution

1	2 Nov1999	Institutional Development for Environmental Management	Akagawa, Everitt, Vo Kim Son
2	March 2000	Institutional Recommendations from the JICA Study on Environmental Improvement in Hanoi	Robert Everitt

WORKSHOP RECORD 1

Date: November 2, 1999
Presenter: Masatoshi Akagawa - support from Robert Everitt VCEP Consultant – Vo Kim Son
Duration: One Day
Subject: Institutional Development for Environmental Management
Outline of Presentation:
Presentation of JICA Study Team • Overview of Need for an Environmental Master Plan • Overview of the JICA Study and Environmental Master Plan • Institutional Development of the Hanoi DOSTE • Decentralization of environmental management to the district level • Authorization of the Environmental Master Plan • Establishment of Environmental Coordination Committee **Presentation by VCEP Consultant** • Overview of GOV system for creating new organizations • Presentation of Alternative Models of ID of Environmental Management at DOSTE and district level
Q&A and Major Discussion Items
Various participants gave detailed responses to the presentations. 1. Thac – Director of Hai Phong DOSTE The environmental management system is still inadequate and the environmental conditions will worsen with continued industrialization and modernization. The Haiphong DOSTE maintains co-ordination with other departments (central, municipal) and receives professional guidance for MOSTE/NEA. It has not observed overlapping responsibilities between the DOSTE and NEA. The problem is one of capacity at the local – there is a need to institutional development. Llocal management is weak – efforts by the public have not been mobilized. There is usually only one person (with little environmental training)at the district level concerned with environment. The DOSTE will implement a pilot study at the district level (Nov – Dec) – begin with one urban district and one suburban district – then expand to entire city. In general, he supports the JICA/VCEP recommendations – however will need revisions to proposal to implement in Hai Phong. The Environmental Agency (EA) must be under the DOSTE and receive instruction (HPPC – DOSTE – EA) and receive professional guidance from MOSTE –NEA. It is not in favour of separate science and technology from environment. He felt that four or five in the maximum number of divisions – some function can be combined in other divisions . He suggested four divisions:

environmental monitoring, pollution control and technology, EIA and administration and general affairs. Administration and General Affairs would include: - administrative office and education and awareness raising. Environmental inspection would be left with Inspection at DOSTE level to avoid multiple inspections.

2. Mr. Dung – Director of Binh Duong DOSTE

The workload for state management far exceeds the capacity .For example there are 1100 large enterprises (State, JV, private) in BZ, also 6000 SMEs – it is not possible to manage environmental pollution. The Binh Duong Environmental Management Division has 11 professional (5 in laboratory) and 6 dealing with general functions; it has one laboratory but it also conducts product testing (for STAMEQ). Has not encountered problems with overlapping responsibilities and duplication with MOSTE/NEA. Environmenta management at the district is characterized as follows: in each district there is a technical and economic office (take care of the affairs of four departments – Transportation, Construction, Industry, and DOSTE. The maximum number of professional in these offices is 8 (only 1 or 2 are concerned with environment). He supported the establishment of environmental management agency- this will be necessary in the short term. However in the long term – a Ministry of Environment at the central level may be required -- Department of Environment at provincial level.

3. Mr. Anh – Da Nang DOSTE

There problems in local environmental management and institutional development is needed. District level environmental management functions need to be reconsidered: only three are appropriate – environmental education and awareness raising, complaints and dispute resolution, inspection. Coordination between (DNPC and DOSTE) and (NEA and DOSTE) has not gone smoothly. This is reflected in the allocation of resources for environmental management. There is no overlap between MOSTE/NEA and DOSTE. Of the six main functions delegated to DOSTE:

- action plan formulation is not well implemented
- SOE reports are not considered in the overall report of the city

He agrees with the need for provincial level environmental agency and suggested that there is need for a strong body at the central level.

4. Mr. Duc – Ministry of Planning and Investment

In 1995 MPI did a study that recommended that a Ministry of Environment be created. The basic structure was a Ministry of Environment with Departments at Provincial Level and District Offices. One staff at commune level. There has been no concrete response from GOV. MPI still maintains this recommendation. The JICA/VCEP recommendation for provincial level environmental agency – should be seen as an interim step

5. Mr Duong Quang Tung , Deputy Director Institute of State Organization Science, GCOP.

Mr Tung offered his personal opinion, not GCOP's. Environmental management should be carried out at the city level as a whole. Environmental management should not be focused to urban districts. It is OK to think about development of environmental management institution for sub-urban district. There is a gap between the environmental management capacity of the existing agencies and the requirement for an effective environmental management. Weneed to reconsider whether to establish new agencies and divisions or to strengthen the capacity of the existing agencies. The fact is that our government is now trying to do administrative reform with the reduction of the staff - the establishment of such new agencies and divisions is not possible at least until the 9th Congress Meeting of the Government. There will not be any changes in term of the state environmental management or the new establishment of the Ministry of Environment until then (in 2001). If we raise the question about the shortage of human resource to the leaders of different DOSTEs who are attending this workshop, we will get the answer " We are lacking of capable staff" not "We don't have enough staff". What should be done to strengthen the capacity of environmental management agencies is to make a survey on the volume their work and work out the schedule and training programs for capacity building. In the long term, overall and uniform environmental management should be conducted from the central to local level. In the short term, priorities should be given to capacity strengthening.

WORKSHOP RECORD 2

Date: March 10, 2000
Presenter: Robert Everitt
Duration: One-half Day
Subject: Institutional Recommendations from the JICA Study on Environmental Improvement in Hanoi
Outline of Presentation:
Presentation of JICA Study Team • Overview of environmental master planning methodology • Overview of priority projects • In depth presentation of key institutional development recommendations: 1. Upgrading and Strengthening of the EMD of DOSTE 2. Establishment/ Strengthening of Monitoring System 3. Strengthening of District Level Environmental Management 4. Reform of URENCO and other solid waste management organisations 5. Strengthening of Hanoi Sewage & Drainage Company 6. Establishment of Environmental Fund 7. Implementation of the Environmental Master Plan
Q&A and Major Discussion Items
A number of insightful comments were received from the workshop participants. The Chairman of the workshop requested responses from the key agencies represented. 1. Government Committee and Organization and Personnel – The representative for GCOP made the point that environment is the responsible of all people and all levels of government. We need to consider how to provide environmental training down to commune level and in the mass organizations or grassroots level. At the macro level, he suggested that there should be an Urban Law for Hanoi to deal with urban planning and to deal with the special characteristics of Hanoi. He supported the idea of the creation of an environmental agency in the Hanoi DOSTE because the urgent environmental management in Hanoi City. Need to further consider the proposed staff levels and organization structure. Need to also consider how environmental management relates to the state management of other sectors (e.g. transportation and construction). Other recommendations for further: 1) examining the levels of fines and punishment for violation of EPLaw; 2) in depth study of Hanoi city laws and regulations, and 3) consideration of the use of economic instruments. He also suggested that we should reconsider the leadership of the ECC. 2. Department of Science, Education, and Environment in Ministry of Planning and Investment. – The presentation identified many useful ideas that can be applied in many parts of Vietnam. Agreed with comments of the representative for the GCOP about the recommendations on environmental management and Hanoi City and district level. The establishment of the Environmental Agency in Hanoi will depend on the changes of the NEA to a General Department. There is a need to clearly define the role of all organizations

with respect to environmental management. Proposed an evaluation of laws and regulation in Hanoi – with recommendations for amendments to legal documents.

3. National Environmental Agency - The representative confirmed that the NEA is urgently and carefully working on the upgrading of environmental agencies at all levels. The directive (36) for the Politburo of June 1998 listed eight key measures but we are still awaiting implementation. He referred to a study tour to India and Sweden (by the NEA and GCOP) to examine alternate models for new General Department . A proposal has already been made to upgrade some agencies at the local level. For example, the HCM already has been upgraded and has a system of environmental management at the District Level. Agrees that Hanoi EMD should be upgraded. He recognizes the importance of the EMP and feels we should begin to implement some to proposed measures. The EMP does not have to be perfect.
4. UNDP Capacity 21 Project: Environmental Issues in Investment Planning – Agrees with the need to integrate environmental issues into urban planning and socioeconomic development strategy. The EMP is an important step and agrees with the upgrading of EMD to an environmental agency. The UNDP project is establishing and environmental fund and is to test the operation and management of this fund. The fund will provide small amounts of money to fund small projects. The implementation of the environmental fund is facing various obstacles. One major obstacle is in establishing the level of pollution for existing industries. There is no reliable environmental monitoring data upon which to base fines or penalties. The first step will be install proper and effective monitoring systems – to check on compliance with standards. Raised two questions? 1) will the environmental agency (pollution control department) play an advisory role in helping industry define appropriate pollution abatement strategies; 2) some of most polluting aspects of the production process are being contracted out to household enterprises – how can these small family enterprises be monitored and controlled.
5. Dr Khien – former Director of Hanoi DOSTE – agrees with ideas presented. All agree on the need to create an environmental agency in Hanoi. Realizes the difficulty in making organizational change at National level – should focus on major cities first. Emphasized the need to environmental planning to be done along with socioeconomic development planning. Also emphasized that many agencies are responsible for environmental management. He raised the issue of the need for an environmental fund and mentioned the $3.5million fund for HCM. He suggested international donors should help find the resources for such a fund for Hanoi.
6. TUPWS – With regard to URENCO – there is shift of responsibility to district level is already taking place. The focus in the future should be solid waste. URENCO should retain responsibility for hazardous waste and hospital waste. The proposed implementation schedule of JICA study team may have to be adjusted to TUPWS current schedule. With regard to HSDC – need to ensure training and operation to be included for waste treatment systems. He recommended further study on the transfer of the responsibility septage from URENCO to HSDC. He raised two questions: 1) how does the groundwater monitoring program - related to the existing system of monitoring wells; .and 2) how can one obtain the results of the noise monitoring.

Summary by Dr. Lam - All agree with need for establishment of environmental agency but we need further discussion on the details. Environmental management is the responsibility of many agencies. There is need for studies that will further define the role of the DOSTE (e.g. URENCO and HSDC) are under TUPWS – how can the DOSTE provide professional guidance?) There is a need to clarify the role of the DOSTE with respect to industries. There are now complaints that there are overlapping inspection activities.

B-2 Environmental Awareness Raising and Education

3	15 October 1998	Environmental awareness and education in Hanoi	David G. Willimas
4	30 September 1999	Environmental education and awareness	David G. Williams

WORKSHOP RECORD 3

Date: 16 October 1998
Presenter: David G. Williams
Duration: 9:00 to 11:30
Subject: Strengthening Environmental Education and Awareness Raising (EEAR)
Outline of Meeting
1. JICA Study Team organized this meeting to exchange views and information on activities of different organizations involved in EEAR. 2. This was the first meeting of this kind. The following organizations participated in the meeting: a. Hanoi DOSTE b. National Youth Union c. Hanoi Women's Union d. Hanoi Association for Environment and Protection of Nature (APNEH) e. Ministry of Education and Training f. Hanoi Faculty of Environmental Science g. Vietnam Chamber of Commerce and Industry h. UNDP 3. Representatives of each organization explained their activities. a. UNDP representative explained that it is carrying out a program for strengthening of EEAR for industrial managers, and UNDP prepared and delivered some information books to the industrial mangers. b. Hanoi Women's Union (HWU) explained as follows: A high proportion of women belong to HWU, which has been active in environmental improvement since 1996. Target audiences are women in general, lower income women and the women street sweepers employed by URENCO. Activities have covered most of the city and included promotions at the Ward and household level to improve waste management through anti-littering, bagging, sweeping, weekly clean-up from lanes, canals, etc. and timing of waste deposits with URENCO carts. The organizational forms include meetings, training courses, clubs, TV and ratio programs, distribution of information produced by DOSTE. c. Hanoi DOSTE explained as follows: The part of the DOSTE that deals with environmental matters in the EMD which currently has 15 staff, although there are plans to establish it as an environmental agency with more authority and staff. It is responsible for promotion of EEAT, both to sectoral agencies in Hanoi, and other public audiences. d. National Youth Union explained as follows: The Youth Union is a mass

organization focused both on broad awareness-raising and community-level action through youth clubs, social activities, counseling, loan funds for small business, and youths assisting children. A UNDP-assisted project focused on youths in the community including Hanoi to help them identify and solve environmental problems, and on journalists, TV and radio to mount mass program on EEAR

e. The meeting participants agreed that it is necessary to have this kind of meetings so that activities of each organization could be more effective by avoiding duplicated efforts.

WORKSHOP RECORD 4

Date: 30 September 1999
Presenter: David G. Williams
Duration: 14:00 to 16:00
Subject: Strategy for Strengthening Environmental Awareness and Education (EEAR)
Outline of Presentation:
The presentation covered the following topics: 1. Strategy a. Identification of priorities for EEAR b. Identification of area of weakness c. To avoid duplication of activities d. To design measures to address institutional and policy issues 2. Priority Area a. Management of solid and liquid waste, both by households and industries b. Conservation and management of wetlands 3. Program Activities (Community Level) a. Women's action b. School c. Industry (cleaner production) d. A pilot program in a community land management 4. Program Activities (City-wide Level) a. Mobilization of youth motivators to raise awareness and action on lakes and wetland b. Strengthening awareness among policy-makers and mass media 5.Supporting Measures
Q&A and Major Discussion Items The participants made the following comments: 1. There are weakness of Hanoi in EEAR are as follows: a. lack of continuity b. fragmentation and isolation c. inadequate organizational arrangements d. weak knowledge base e. weak links to public policy f. lack of stable sources of funds 2. Laws and regulation concerning EEAR is also week 3. It was very useful to have this EEAR meeting participated by many different groups. We should continue this kind of meeting and activities.

B-3 Solid Waste Management

5	19 December 1998	Waste transfer station location and sanitary landfill system	Sakaguchi & Takahata
6	21 July 1999	Plan for Nam Son landfill site	Soeda & Takahata
7	17 August 1999	Waste Disposal Method Options	Sakaguchi
8	17 August 1999	Recycling from municipal solid waste	Soeda
9	27 October 1999	Waste transport using railway	Takahata
10	9 March 2000	Solid waste management improvement plan	Kiichiro Sakaguchi

WORKSHOP RECORD 5

Date: 19 December 1998
Presenter: Kiichiro Sakaguchi & Koshi Takahata
Duration: 08:30 to 12:00
Subject: Waste transfer station location and sanitary landfill system
Outline of Presentation
A. Waste Transfer station locations 1. Objective of transfer station a. Minimization of overall transport cost 2. Criteria for selection of transfer station a. Cost b. Environment impact c. Social impact 3. Candidate locations a. 5 locations on the west (Dong Ngac, Co Nhue, Xuan Dinh, Phu thuong, Tay Mo) b. 4 locations on the east (Lam Du, Duc Giang, Noi Du, Laihoang) c. 1 location on the south (Tam Hiep) 4. Evaluation of locations The preferred locations are a. Dong Ngac b. Duc Giang B. Sanitary landfill system 1. Design concept 2. Types of sanitary landfill 3. Functions and facilities of sanitary landfill 4. Post closure landfill management 5. Post closure site use
Q & A and Major Discussion Items Concerning Waste transfer station location 1. URENCO's comment: HPC has identified Tam Hiep, Tay Mo as candidate sites. Why the JICA study team does not recommend these sites? 2. The JICA Study Team: Tam Hiep is south of the city center, while the Nam Son landfill site is the north of the city center, and therefore, transport distance is long. Lai Hoang has has very bad access, and construction of the access road would cost much.

WORKSHOP RECORD 6

Date: July 21, 1999
Presenter: Shungo Soeda
Duration: 13:00 to 15:30
Subject: Plan for Nam Son landfill site (Phase 2)
Outline of Presentation:
The presentation was made in five parts: 1. Basic concept of Nam Son landfill site • Objective • Site location • Site area • Regulations and standards • Acceptable waste and non-acceptable waste • Commencement and operation • Post-closure land use of site • Use period • Project organization • Resettlement • Distance between the landfill site and local residents • Access roads • Major facilities • Landfill method • Incoming waste amount 2. Facility and equipment plan • Retaining structure • Liner facilities • Leachate collection • Leachate treatment • Landfill gas control 3. Landfill operation and site management plan • Landfill methods • Environmental monitoring 4. Organization plan 5. Construction schedule plan
Q&A and Major Discussion Items 1. A question was raised how industrial hazardous waste would be treated. Mr. Soeda explained that industrial waste matter was out of scope for preparation of this feasibility study on Nam Son Landfill phase 2. But Mr. Soeda also mentioned that one small compartment would be prepared for residues of industrial hazardous waste treatment if HPC would carry out another industrial waste management

project studied by URENCO

2. A participant asked about detail calculation of landfill duration and mentioned that an assumption of cover soil volume which was 30% might be very large. Mr. Soeda explained that assumption used in a handout was most typical and standard ratio for understanding a preliminary plan, the study team had already been calculating the duration in detail and it was expected to expand with less cover soil.
3. A participant asked why the distance between the landfill and residential area was set up 500m. Mr. Soeda explained that this distance was followed to the Vietnamese technical design guideline for sanitary landfill. As the environmental regulation for sanitary landfill is now under the preparation, this project shall also follow to it when the new regulation will be officially approved.
4. Mr. Duc of VIWASE pointed out some differences between two F/S report, one done by VIWASE and the other by JICA study team as follows.
   - Landfill height
   - Expected waste volume for the landfill
   - Leachate collection and treatment method including leachate adjusting pond
   - Considering the large-scale composting project by US company

   Mr. Soeda explained those differences would be discussed and finalized during this local study period between Vietnamese side and JICA study team side.

WORKSHOP RECORD 7

Date: 17 August, 1999
Presenter: Kiichiro Sakaguchi
Duration: 8:30 to 11:00
Subject: Waste Disposal Method Options
Outline of Presentation:
The presentation covered the following topics: 6. Waste disposal option a. open dumping b. sanitary landfill c. incineration and landfill d. composting and landfill e. others 7. Comparison of waste disposal options 8. Compost: Evaluation and past experience 9. Evaluation of the Power generation with coal and waste proposed by JCI a. Economic evaluation b. Environmental evaluation c. Cost comparison to the sanitary landfill
Q&A and Major Discussion Items
The workshop participants made the following comments instead of questions. Mr. Than (NEA) 1. NEA supports the conclusions of the JICA Study about waste disposal options. 2. HPC should follow the conclusion. Dr. Khien (DOSTE) 3. It is necessary to draft regulations on the emissions from waste incinerators. Vietnamese Consultant 4. Cost of the incineration can be recovered by the sales of electricity. 5. In Hanoi there are 28 enterprises that produce compost. 6. Acquisition of land for the sanitary landfill is difficult. Hanoi Polytechnic University 7. Incineration would be needed in future because of scarcity of land available for landfill. 8. Sorting is necessary before incineration because calorie of Hanoi waste is low. 9. Temperature of waste incineration should be 1,400 – 1,500 cent degree to avoid harmful emissions. 10.There will be more demand for compost in future because there will be green belt planned around the city according to Hanoi city master plan.

WORKSHOP RECORD 8

Date: August 17, 1999
Presenter: Shungo Soeda
Duration: 10:40 to 12:10
Subject: Recycling from municipal solid waste
Outline of Presentation:
The presentation was made in four parts: 10. General outline of recycling • What is "recycling"? • What is "recyclable materials"? • Why recycling? (Benefit or Incentives) • What is recycling cost? • Flow of material resources • Commencement and operation • Recycling flow model between 2 products • Benefit estimation method of recycling 11. Current recycling activities in Hanoi and Japan • Recycling activities in Hanoi • Waste and recyclable flow in Hanoi • Changes of total MSW in Japan • Changes of total waste disposal cost in Japan • Waste management index in some countries • Recycling law systems in Japan • Current status of recycling rates in Japan • Some European recycling system • Japanese packaging recycling law • Typical recyclable collection flow in Japan 12. Typical option for waste treatment • Intermediate treatment methods 1) Incineration 2) Incineration with heat recovery 3) Incineration with slagging 4) Gasification with slagging 5) Refuse Derived Fuel (RDF) 6) Composting 13. Summary and Conclusion
Q&A and Major Discussion Items

Each participant made comments or questions about both topics of Part 1 (Waste disposal options) and this part 2. Major discussion items and comments regarding only part 2 is descried as follows.

5. Dr. Khien: HPC well understand that sanitary landfill methods is the most appropriate disposal way for Hanoi with current technical and economical condition. But HPC is really afraid that it will be very hard to find another candidate for new landfill site following Nam Son. Thus, incineration methods should be considered in future. HPC expects low calorific value of municipal waste will be increased in future though it is too low to self-burn now. Also mixing with some industrial waste to raise LCV can be considered.

6. A question about composting was raised and a participant wanted to know the composting project with Earthcare that is American company. But Study team answered the team couldn't make any comments about the project because the team had not receive any official information.
7. A comment about composting was introduced that composting must be a good treatment option because the domestic waste composition of Hanoi is organic rich. The Study team strongly explained that waste composition is just one factor for adopting the composting method. There are many other factors more crucial than composition such as market demand, quality control, source separation system and so on.
8. Another comment about composting was that it was expected to be introduced some other example of the world that composting had been carried out very successfully.
9. A comment about importance of source separation system was raised for good composting or incinerating method. The study team explained that source separation is definitely important for various waste and recycling management system, but it is necessary for HPC to raise the environmental awareness and to re-consider an proper collection system.
10. Many participants pointed out the necessity of intermediate treatment method such as incineration and composting because of the difficulty to find lands for landfill site. The study team explained about that many times during and after the presentation that HPC should consider that possibility to find the landfill area will definitely expand if they can use same investment for such costly methods.
11. Some comment about the waste-coal power generation project prepared by HPC were raised that the idea of mixing coal and waste is understandable for increase the calorific value but it is not feasible for Hanoi.
12. Mr. Degregorio of CERS made a small speech about current recycling situation in Hanoi. Hanoi has already had source separation system for recycling. Private junk buyers collect about 200 tons /day of recyclable materials such as paper, plastic and metals. This contributes to the reduction of waste to be collected by URENCO.

WORKSHOP RECORD 9

Date: 27 October 1999

Presenter: Koshi Takahata

Duration: 08:30 to 12:00

Subject: Waste transport using railway

Outline of Presentation

1. Introduction

2. Advantages and disadvantage of the railway transport

2.1 Advantage

a. Less emission gas (However, Hanoi railway use diesel as fuel, and therefore not advantageous in this aspect.)
b. Running cost may low

2.2 Disadvantages

a. high cost
b. railway system require transfer station at both ends of the railway line
c. construction of extension line (10 km altogether is needed.)
d. Extension line will have to cross the national road
e. Takes long time for study and planning

3. Japanese case

a. There is only one case in Kawasaki city that use railway for transporting waste. However, they transport waste to an incineration plant, not to a landfill site
b. In Japan, it is considered that use of railway is feasible only if the transport distance is more than 500km.

4. Cases in Europe

a. There are some cities in France, Holland and Germany that use railway for transport waste.
b. In case of Holland, railway is used to transport garden waste

Q & A and Major Discussion Items

3. In Hanoi, railway is underutilized, and there is a need to increase the utilization of the railway.
4. In general, the information given in the workshop is useful. However, some more study is necessary about railway system.

WORKSHOP RECORD 10

Date: 9 Mar 2000
Presenter: Kiichiro Sakaguchi
Duration: 08:30 to 12:00 & 13:30 – 15:30
Subject: Solid Waste Management Improvement Plan
Outline of Presentation
Topics covered in each presentation ***Presentation 1: Institutional & financial issue*** a. Shift of solid waste management (SWM) responsibility from HPC to Urban Districts b. Privatization of SWM services **Presentation 2: Waste collection and transport** a. Service targets b. Direct collection (Recommended system) c. Transfer and secondary transport **Presentation 3: Waste disposal** a. Options of waste disposal methods b. Land acquisition for landfill c. Nam Son Phase 2 Landfill Plan including the environmental protection measures proposed d. Power generation with coal and waste proposed by a Japanese group
Q & A and Major Discussion Items 1. Prime Minister's Office a. In principle, privatization is OK. How to implement it is an issue. b. HPC/TUPWS should issue regulation/guidelines concerning the privatization. c. UEE (Urban environment enterprise) cannot be shifted to District immediately. d. There are some cities that contracted out SWM services to small organizations, but it was not successful. e. In privatization, type of swm services, area, and type of waste should be specified. 2. DOSTE Dr. Khien a. agree that road transport of waste is better than railway transport b. agree that large-scale compost would not be feasible c. agree that sanitary landfill is most economical, but only if land is available. d. Sanitary landfill system applied in Fukuoka is very good.. JICA's report should show method of leach collection and treatment. e. Waste-to-Energy Project should be included in the report.

f. It is impossible to get land outside the HPC jurisdiction. Farmers will not accept siting of landfill site.
g. Incineration is necessary to avoid pollution of ground water.
h. In Vietnam, it is not necessary that GDP per capita reach $5,000 before introducing an incinerator, because the value of the money is different from Japan.
i. If coal/waste generation is not feasible, JICA study team should show alternative fuels.

3. Chief Architect Office
a. The presentation should also include management and social aspects in addition to technical and economic aspects.
b. JICA's other studies such as Hanoi transport study and drainage study should be reflected in the current JICA study.
c. Role of each HPC agencies should be described.
d. Not only the sanitary landfill but also other disposal options should be considered.
e. Privatization is good in principle.
f. Sorting at source should be encouraged.

4. VIWASTE Deputy Director
a. VIWASE's feasibility study on Nam Son Complex will be finalized by June this years. VIWASE's study include comparison between railway system and road system.
b. VIWASTE propose used of two locations, i.e., Dong Ngac and Duc Giang as transfer station.
c. Total investment cost ($70.1 million) should be further discussed.

5. HPC Socio-economic study institute professor
a. The presentation is logical, have good reasoning, and good understanding of Vietnam.
b. Institutional proposal is acceptable. But its implementation is very difficult. It should be implemented in a form of pilot project. Initially, we should start in less urbanized urban districts. We should prepare program and schedule for such pilot project.
c. Not only privatization but also socialization of SWM is important. "Renovation" is more appropriate than improvement".
d. It is questionable if the comparison between Da Nang Urenco and Hanoi Urenco have representativeness.
e. Appropriate disposal option may depends on amount and type of waste, and other conditions.
f. Shift of SWM responsibility to Districts may weaken the management of SWM facilities.

6. URENCO Miss Ha
a. The presentation is useful to URENCO.
b. Direct collection can be applied partially in certain areas.
c. Composting is also important.
d. Environmental awareness is important.

7. DOSTE Miss Kim
a. There are some people in Dong Ngac who oppose to transfer station in Dong Ngac.
b. What should we do before we reach $5,000 per capita GDP?

8. Ministry of Construction
a. I highly evaluate the presentation.
b. Report (proposal) is feasible.
c. Land acquisition outside the city area is legally possible according to the regulation issued last year. This must also be possible in reality.
d. Demolition waste is a problem. It should be considered.
e. Waste sorting also should be studied.
f. Environmental charges should be studied.
g. The presentation about site selection is convincing.
h. I appreciate the proposal of non-compaction system for waste transfer.
i. We are wondering whether EM is effective or not.
j. Presentation about power generation is convincing.
k. Central system for hospital waste management is good.

9. DOSTE Dr. Khien
a. Privatization is OK.
b. Awareness raising is necessary for smooth implementation.
c. Laws concerning SWM should be dealt with.
d. Awareness raising should be included in the report.
e. Coordination between different agencies should be included in the report.
f. I understand that railway system is costly, but it should be proved.
g. It is necessary to check the road can accept the proposed vehicles for the secondary transport.
h. Recognize that best location of transfer station is Dong Ngac 1 and 2, and Co Nhue.
i. The report should show leachate treatment technology proposed.
j. Because HPC has already hospital waste incinerator, there is no problem about it.
k. If we increase compensation rate, it would affect other cities.
l. Acceptable that the incineration would not be included in the priority projects.
m. If JCI's proposal is not good, recommend other systems.

10. JICA Study Team Sakaguchi
a. The study team propose a basic direction such as privatization and application of direct collection system. The Vietnamese side should prepare detail plans for implementation.

B-4 Water Environment, Air, Noise, Environmental Zoning, and Septage Management

11	16 October 1998	Zoning for Environmental Management Plan & Water Pollution Control	Watanabe, T. Naito, M. Fujii, N.MChuong
12	26 Oct 1999	Public Sewerage Development Plan & Prediction of Water Quality	H.Wakasa, M.Fujii, N.D.Khoi, P.H.Minh
13	4 November 2000	Septage management	Robert Despault
14	9 March 2000	Water, air and noise	Wakasa

WORKSHOP RECORD 11

Date: October 16 1998
Presenter: A.WATANABE, T.NAITO, M.FUJII, N.M.CHUONG
Duration: 9:00 – 12:30 a.m.
Subject: Zoning for Environmental Management Plan & Water Pollution Control
Outline of Presentation:
1. Case-study on Environmental Management Plan - Outline of Tokyo City - Introduction of the Environmental Management Plan in Tokyo 2. Zoning for Environmental Management Plan in Hanoi - Approach the zoning - Outline of the Environmental Zones 3. Surface Water Pollution Control - Objectives for Control - Control Planning Methodology - Wastewater treatment methods 4. Urban Master Plan for Hanoi City to 2020 - Outline of Urban Master Plan
Q&A and Major Discussion Items
1. Necessity of the environmental management plan and zoning approach were accepted by Vietnamese side. 2. Traffic jam shall include into the environmental master plan. 3. The Red River basin shall be independently set up for an environmental zone. 4. The proposed zones are so wide and large. It is recommended that the proposed zoning plan is to be divided by the sub-zone with small scale 5. Since the attendants do not cover the all organizations related to sewerage development, the Study shall pay attention to select the attendants for workshop carefully. 6. When planning the wastewater control, water supply shall be considered. 7. As for water pollution control, it aimed only at domestic wastewater and so when planning the environmental master plan, industrial wastewater shall be also considered. 8. The development of the sewerage system shall be concentrated at the urban city area. 9. Urban Master Plan for Hanoi City to 2020 shall be described with detailed and specified manners.

WORKSHOP RECORD 12

Date: October 26 1999
Presenter: H.WAKASA, M.FUJII, N.D.KHOI, P.H.MINH
Duration:8:30 – 12:00 a.m.
Subject: Public Sewerage Development Plan & Prediction of Water Quality
Outline of Presentation:
5. Public Sewerage Development plan in Hanoi - Planning Method - Framework of Development Plan in Hanoi - Improvement Plan for Wastewater Disposal System in Hanoi - Public Sewerage Development Plan in the Urban Area 6. Overview on Groundwater Quality - Current Environmental Study by DOSTE - Groundwater Quality Analysis 7. Prediction of Surface Water Quality - Prediction Method - Prediction of Surface Water Quality for City Rivers - Prediction of Surface Water Quality for Environmental Zones 8. Progress of Drainage Project under JBIC - Outline of Drainage Project (1st Stage & 2nd Stage) - Progress of The On-going Project
Q&A and Major Discussion Items
10.The To Lich Drainage Project including 2nd Stage shall be completed prior to the commencement of the public sewerage project. 11.All projects recommended by the Study shall be coordinated by HPC to make priority orders for implementation. 12.Prediction method for water quality is reasonable but information on prediction in Hanoi is not enough. Therefore detail information shall be reported at the next workshop/progress report. 13.The West Lake Improvement Project is at the F/S Stage, and so the West Lake F/S Team and the JICA Study Team shall join forces and exchange opinions mutually. 14.Since the attendants do not cover the all organizations related to sewerage development, the Study shall pay attention to select the attendants for workshop carefully. 15.This workshop is useful but time is short. Next workshop shall secure enough time for discussion. 16.The workshop materials shall be distributed in advance as far as possible. 17.In principal, the drainage, environment improvement and West Lake projects have been executing according the Urban Drainage and Wastewater Master Plan prepared by HPC/JICA.

WORKSHOP RECORD 13

Date: November 4, 1999

Presenter: Robert Despault

Duration: 13:30 to 17:00

Subject: Septage Management

Outline of Presentation:

The presentation was made in six parts:

14. Review of sanitation technologies used in Hanoi.
15. Review of present conditions, including available data, amounts of septage, collection and disposal practices.
16. Presentation of probable future conditions including population trends in Hanoi, Gia Lam and Dong Anh, calculation methods and assumptions for estimating quantities of septage.
17. Review of septage disposal and treatment options and qualitative comparison of options: land application, landfill with solid waste, composting, co-treatment with wastewater, aqua culture, separate biological treatment, waste stabilization ponds for septage, and lime stabilization.
18. Summary of master plan directions and proposals for septage collection and disposal. Explain the impact of sewerage development on the quantities of septage in the future. Identify how septage collection and disposal is coordinated with master plan for wastewater disposal.
19. Review of priority projects for septage collection and disposal:
    - Replacement of old septage collection vehicles
    - Construction of waste stabilization ponds for septage disposal and treatment
20. Roundtable discussion questions and answer period.

Q&A and Major Discussion Items

13. Participants noted that many assumptions have been made to estimate the amounts of septage that will need to be collected in the future. Participants felt that the two calculation methods presented should be more accurate. Mr. Despault explained that the calculations were very rough estimates and were made for planning purposes to show problematic issues. The two calculation methods show how sensitive the analysis is to assumptions. Participants understand that more data is required to support the assumptions made in the calculations. Further study should focus on performance of septic tanks, optimum cleaning frequency, use of enzymes to enhance digestion, number of installations in service.
14. There was a lively debate on whether or not septic tanks should be removed when households are connected to sewerage systems in the future. The proposed master plan calls for septic tanks to be removed in order to eliminate the maintenance, collection and disposal problems created by septic tanks. Most of the participants felt that it will be impossible to disconnect septic tanks. The implications of leaving the tanks in service include:
    - Wastewater to the treatment plant will have weak BOD which may affect the treatment plant process
    - The infrastructure required for collection and disposal of septage will grow to significant proportions in direct relation to population growth.

    The implications of leaving septic tanks connected to the sewerage system will need to be evaluated in the master plan for sewerage development.
15. The CAO raised concerns about the proposed location for the septage ponds and future WWTP in Gia Lam. It is too close to the Kieu Ky landfill site and may exert too much pressure on local residents. Mr. Despault explained that there were probably many other suitable sites that could

be found. Septage ponds need a large land area, and should be located close to water to facilitate dilution of influent and disposal of effluent. The disposal site should also be located close to the collection area to minimize transportation.

16. Participants requested that other treatment options be considered and evaluated: composting, wetlands, and the possible use of enzyme microorganisms. Mr. Despault explained that the most commonly used technologies had been evaluated. Wetlands are rarely used for septage treatment because the septage is very strong waste. Wetlands could be used to polish effluent from septage ponds. Composting and the use of enzymes are not widely used and although they might be feasible on a small scale they are still considered to be fringe technologies. More research on their application would be required on a pilot scale before they could be implemented as the main treatment and disposal option. Septage ponds are recommended because they have a good performance record and can be implemented quickly as a priority project.
17. A question was raised regarding who should be responsible for collection and disposal of septage. Mr. Despault outlined the team's proposal that TUPWS should transfer the septage collection enterprise from URENCO to HSDC. Septage is a liquid waste and very closely related to wastewater and sewerage development. Since septage will eventually be treated at wastewater treatment plants operated by HSDC, it would be better for HSDC to control collection and disposal of waste to minimize impacts on the treatment process. Giving septage management responsibility to HSDC will further simplify sewerage planning since it gives HSDC the means for collecting the data required to support planning: eg. Household characteristics, type of installations, size, frequency of cleaning, quantities. Integration of septage and wastewater management within one authority will also ensure that plans for septage are closely coordinated with the master plan for sewerage development approved by MOC.

WORKSHOP RECORD 14

Date: March 10 2000
Presenter: H.WAKASA
Duration:8:30 – 11:45 a.m.
Subject: Prediction of Environmental Qualities & Public Sewerage Development Plan
Outline of Presentation:
9. Prediction of Current/Future Environmental Qualities - Prediction Method & Standards - Prediction of Surface Water Quality without counter measures and with counter measures - Prediction of Air Quality without counter measures and with counter measures - Prediction of Noise & Vibration Qualities without counter measures and with counter measures 10. Public Sewerage & Drainage Development plan in Hanoi - Planning Method - Framework of Development Plan in Hanoi - Improvement Plan for Wastewater Disposal System in Hanoi - Public Sewerage & Drainage Development Plan in the Urban Area - Outline of Drainage Project (1st Stage & 2nd Stage) - TOR of F/S for Wastewater Disposal System in Hanoi
Q&A and Major Discussion Items
18.It is reasonable that this study concentrated on the field of wastewater disposal system and methodology of approach for the planning is correct. 19.However, the study shall give attention to review the previous study made in 1995, such as validity of elevation of sewer and channels. 20.Locations of treatment plants shall be reconsidered due to limitation of land at urban area. Additionally, new treatment process with compact space and high technology shall be introduced. 21.For urban area, the activated sludge method is recomendable. 22.In the West Lake Improvement Project, flushing water project being conducted from the Red River shall be reconsidered carefully since this project give negative impacts to socio-economical aspect and ecosystem in the West Lake area. 23.City lakes shall be protected for environmental improvement with dredging of sediments and lakeshore revetment. It is necessary that wastewater cut off to inflow into lakes. 24.Quality of underground water shall be also predicted. 25.Sewerage system for sub urban area shall be considered more. 26.In principal, all comments shall be review and reflected for the final report.

B-5 Economy

15	18 December 1998	Economic Evaluation of Investments Projects and Economic Incentives Approach for Environmental Protection	Jeremy Warford

WORKSHOP RECORD 15

Date: 18 December 1998
Presenter: Jeremy J. Warford
Duration: 9:00 to 11:00
Subject: A: Economic Evaluation of Investments Projects and B: Economic Incentives Approach for Environmental Protection
Outline of Presentation:
The presentation covered the following topics: **Topic A Economic Evaluation of Environmental Projects** 21. Measurement of costs and benefits f. Types of benefits g. Quantification of benefits h. Discount rates 22. Economic Evaluation Criteria a. Affordability b. Least cost c. Profitability 3. Indicators of affordability a. Ratio of project expenditures to the citizens' income (GRP) b. Ratio of project expenditures to the municipal revenue 4. Indicator of profitability a. Net present value (NPV) b. Internal rate of return (IRR) <u>Topic B Economic Incentives Approach for Environmental Protection</u> 1. Rational for the approach 2. Options of economic incentives a. Subsidies and pricing b. Pollution charges c. Environmental taxes d. Deposit and refund 3. Applicability of the approach
Q&A and Major Discussion Items The participants made the following comments: 1. There are some other factors (other than what were explained) that affect investment decision. 2. Concerning the economic incentives approach, this issue may be handled by the central government. 3. We need more studies about this approach.

B-6 Technology Transfer Seminar

16	16 March 2000	Technology transfer seminar	Masatoshi Akagawa

WORKSHOP RECORD 16

Date: March 16, 2000
Presenter: Masatoshi Akagawa
Duration: One Day
Subject: Technology Transfer Seminar
Outline of Presentation:
Presentation of JICA Study Team • Methodologies adopted for formulating the environemental master plan • Contents of the Environmental Master Plan recommended by the JICA Study - Recommended structural measures - Recommended institutional measures • Works carried out for the technology transfer • Human resource development plans for individual counterparts for the JICA Study • Results of the Preliminary Feasibility Study for the urgent project of the Nam Son Sanitary Landfill and Waste Transfer System **Presentation of the Vietnamese Counterparts** • Experience and knowledge obtained by the on-the-job training in the JICA Study • Experience and knowledge obtained by the training in Japan Questions & Answers 1. Dr. Lam, Director of PMB and Director of DOSTE Remarks; This JICA Study and the Report is very comprehensive one worked out by scientific methods and supported by adequate and updated data. 2. Professor Dan Q1: How to coordinate the environmental plan with the socio-economic and spatial plans. A1: JICA Study recommends that the environmental staff in the Hanoi Authority of Planning and Investment which is responsible for the preparation of socio-economic development plan and those in the Hanoi Chief Architect Office which is responsible for the spatial plan, should be reinforced firstly. The recommended environmental master plan should be amended every 5 years so that the actual development be incorporated as well as the plans and recommendations in the socio-economic development plan and the spatial plan be considered in the amendment of the environmental plan. Q2: How to preserve the valuable cultural assets of the Ancient Quarter A2: Firstly inventory and classification/grading should be prepared for the cultural assets of the Ancient Quarter. Accordingly, either the whole or parts or appearance should be preserved. The convenience and comfort lives of the residents living in the Ancient Quarter should also be taken into account.

Attachment C:

Human Resource Development Plan

List of HRD Plan

No.	Organization	Name
1	DOSTE	Mr. Nguyen Dang Khoi
2	DOSTE	Ms. Luu Thanh Chi
3	HSDC	Mr. Phan Hoai Minh
4	HAPI	Mr. Tran Anh Chu
5	TUPWS	Ms. Nguyen Thi Thuan
6	HCAO	Urban Planner
7	URENCO	Civil Engineer

HUMAN RESOURCE DEVELOPMENT PLAN FOR THE COUNTERPARTS OF THE JICA STUDY (No. 1)

1. Personal History

(1) Particulars

1) Full name : NGUYEN DANG KHOI

2) Age : 27

3) Sex : male

4) Marital status: married

(2) Academic background

1) Name of school/university:

Hanoi University : 8/1992 - 10/1996

Foreign Trade University : 8/1994 - 12/1997

2) Speciality/faculty:

Environment

3) Degree

- Bachelor of Science
- Bachelor of Economy

(3) Working career

Current and previous organisations which he/she is attached to

1) Names of organisations: Consulting Center for Science, Technology and Environment - Vietnam Union of Scientific and Technical Associations

(a) Working periods: since 1992

(b) Position and job description:

- Participating in all environmental issues of projects, researches on environment.
- Preparing EIA reports for investment projects in Vietnam.

2) Hanoi DOSTE

(a) Working periods : since 1998 to date

(b) Position and job description:

- Taking part in environmental management activities.

- Participating in environmental projects
- Appraisal EIA reports
- Preparing technical reports for the Vice Director in charge of environment (Hanoi DOSTE)

2. Rearing Plan

(1) Past training history:

Past Training 1;

1) Subject of training: GeoEnvironmental and Environmental Control Engineering
2) Training period: 1/1997 - 2/1997
3) Manner of training: Workshop
4) Provider of the training
   Name of organisations: University of Saskatchewan, Saskatoon, Sask-Canada
5) Major outputs and relevance to the present job:
   Improving technical knowledge and experiences to contribute to the implementation of environmental projects, especially the control of environment in preparing EIA reports

Past Training 2;

1) Subject of training: Environmental Impact Assessment Capability Strengthening Programme.
2) Training period: March - June 1998
3) Manner of training: On the job training in Hanoi
4) Provider of the training
   Name of organisations: Haskoning Consulting Engineers and Architects and Netherlands Commission for EIA
5) Major outputs and relevance to the present job: Strengthening experiences in preparing EIA reports.

Past Training 3;

1) Subject of training: Data Analysis and Interpretation and State of Environment Reporting
2) Training period: 25/1 - 29/1,1999
3) Manner of training: On the job training in Hai Phong
4) Provider of the training

Name of organisations: Vietnam - Canada Environment Project

5) Major outputs and relevance to the present job:

- Acquiring more experiences in analysing and interpreting data;
- Improving capability in existing environment reports.

Past Training 4;

1) Subject of training: Air Monitoring
2) Training period: 3/1999
3) Manner of training: Workshop in France
4) Provider of the training

Name of organisations: Environment, S.A

5) Major outputs and relevance to the present job: Improving capability and experience in air monitoring.

(2) Necessity and direction of the training

1) Necessity

At the present Hanoi DOSTE is concentrating the study on environmental improvement for Hanoi City in corporation with JICA. This project will propose environmental master plan in Hanoi. At the same time, cooperating with other countries and international organisations for instance: VCEP- Canada, Toxicology-UNDP, Hanoi DOSTE is planning to develop the Environmental Management Division. Accordingly, DOSTE need to increase suitable environmental experts in the field water and air pollution control and monitoring.

2) Potential

His potential for training is assessed based on the experience and personal ability below:

- He specialises in the management of environmental problems in Hanoi,

(He understands the situation of environmental pollution in Hanoi)

- He grasps the current situation of environmental pollution in Hanoi and the causes of this pollution,
- He is very interested in pollution control in Hanoi,
- He is a promising expert in environmental management at DOSTE,
- He plays an important part as a coordinator between Hanoi DOSTE and the JICA Study Team during the implementation of the study on environmental improvement for Hanoi City
- He is used to working with foreigners.

3) Future career plan by the counterpart

He wishes to contribute the valuable knowledge from this training with the JICA Study Team to prospective projects in Hanoi in field of water and air pollution.

4) Policy of the organisation for his future career, to which he is currently attached

Hanoi DOSTE is planning to set up an Environmental Agency on the basis of the existing Environmental Management Department. He is expected to perform a key role for environmental management especially pollution control in the new Agency.

(3) Rearing Plan

1) Basic direction and recommendations for rearing/training in the coming years

The following items for training in the coming year are recommended:

- General guidance on water pollution control,
- Site inspection tour for the wastewater treatment plans in Viet Nam, for instance plants at factories and centralised plants of industrial estates,
- Lecture on water pollution control planning and water quality monitoring, such as JICA group training in Japan,
- Site inspection tour for the wastewater treatment system and water quality monitoring system, such as Bangkok and Tokyo.

2) Training program in the JICA Environmental Study

Main items for training is summarised below:

(a) On-the-job training

- Grasping the progress of the Hanoi Drainage and Environmental Improvement Project (Phase I),
- Assistance to preparation of present water environmental condition report,
- Survey on current situation of surface water and groundwater

(b) Workshops

- Preparation of workshop for current situation of surface water and groundwater, and carrying out presentation

3) Training program in Vietnam

The following program is recommended:

(a) Subject of training

Water pollution control and water quality monitoring

(b) Training period

2000 to 20001 (intermittently)

(c) Manner of training

a) On-the-job training

Survey and inspection of water quality

b) Training courses, etc.

(d) Provider of the training

DOSTE

4) Overseas training program

Since Viet Nam doesn't has enough experience for water pollution control and water quality monitoring, the following overseas training is strongly recommended:

(a) Subject of training

Main subject is to learn water pollution control and water quality monitoring

(b) Training period

More than 3 months

(c) Manner of training

a) On-the-job training

Lecture, guidance and inspection tour

b) Training courses, etc.

JICA group training course in Japan is instructive.

(d) Provider of the training

JICA or other international agencies

5) Assessment of his/her possible contribution to the implementation of Environmental Master Plan for Hanoi City (EMP)

(a) Relevance to the current job

Projects to be recommended by EMP, especially the priority projects, are relevant to the following current jobs conducted by him:

- Environmental management in the field of water,

(b) Expected contribution to the implementation of EMP

He will contribute the following items to the implementation of EMP in cooperation with DOSTE:

- Assistance and advice for enforcement of water quality monitoring and inspection system,
- Leading for studies, planning of water pollution control measures.

HUMAN RESOURCE DEVELOPMENT PLAN FOR THE COUNTERPARTS OF THE JICA STUDY (No. 2)

1. Personal History

(1) Particulars

1) Full name : LUU THANH CHI
2) Age : 24
3) Sex : Female
4) Marital status : single

(2) Academic background

1) Name of school/university:
Natural Science University : 9/1992 - 6/1996
And : 8/1997 - 8/1999
2) Speciality/faculty:
- Biology faculty
- Environment faculty

3) Degree
- Bachelor of Environmental Ecology
- Master of Environment

(3) Working career

1) Current and previous organisations which he/she is attached to
Names of organisations:
- Institute of Ecology and Biology Resources – National Center for Natural Science and Technology.
Working periods: since 1996 - 1998
- Hanoi DOSTE
Working periods: 1998 to date

2) Position and job description for each organisation
- Research into Environmental Pollutants of Health Effects
- Participating in Environmental projects
- Taking part in Environmental Management Activities

2. Rearing Plan

(1) Past training history:

Past Training 1;

1) Subject of training: Reuse domestic wastewater in the farms
2) Training period: 6/1998
3) Manner of training: Workshop
4) Provider of the training
   Name of organisations: Institute of Biology
5) Major outputs and relevance to the present job
   - Improving current technical knowledge and getting more experiences about method wastewater treatment
   - Access to new and high technologies, applying for the job at home
   - Contribute for the environmental protection in Hanoi

Past Training 2;

1) Subject of training: Green Productivity for Professionals
2) Training period: 8/1998
3) Manner of training: On the job training in Hanoi
4) Provider of the training
   Name of organisations: Vietnam Productivity Center
5) Major outputs and relevance to the present job
   - Understanding of the concepts and practices for promoting Green Productivity
   - Improving knowledge of the Green Productivity techniques, technologies and assessment methodology
   - To deepen the skills in sustaining Green Productivity practices within an organization

(2) Necessity and direction of the training

1) Necessity

At the present Hanoi DOSTE is concentrating the study on environmental improvement for Hanoi City in corporation with JICA. This project will propose environmental master plan in Hanoi. At the same time, cooperating with other countries and international organisations for instance: VCEP- Canada, Toxicology-UNDP, Hanoi DOSTE is planning to develop the Environmental Management

Division. Accordingly, DOSTE need to increase suitable environmental experts in the field water and air pollution control and monitoring.

2) Potential

Her potential for training is assessed based on the experience and personal ability below:

- She is in charge of air pollution control and air monitoring in DOSTE,
- She has background in the field of water pollution control and water quality monitoring, too,
- She is studying about environmental management and environmental master plan,
- She is working in air pollution control in Hanoi City, she plays an important part as a coordinator between Hanoi DOSTE and the JICA Study Team during the implementation of the Study on Environmental improvement for Hanoi City (Phase II),
- She is used to working with foreigners.

3) Future career plan by the counterpart

She wishes to participate in projects and studies about environment, especially in methods and technologies for air and water pollution control as an expert after this training with JICA Study Team.

4) Policy of the organisation for her future career, to which she is currently attached

Hanoi DOSTE is planning to develop the Environmental Management Division to Environmental Agency. Hanoi DOSTE hopes that she performs a key part for environmental management, especially air quality monitoring system in the new agency.

(3) Rearing Plan

1) Basic direction and recommendations for rearing/training in the coming years

The following items for training in the coming years are recommended:

- General guidance on the air quality analysis,
- Site inspection tour for air pollution control system in industrial factories,
- Lecture on air pollution control and air monitoring, such as JICA group training in Japan,
- Site inspection tour for the air pollution control and air monitoring, such as

Bangkok and Tokyo.

2) Training program in the JICA Environmental Study

Main items for training is summarised below:

(a) On-the-job training

- Grasping the progress of the Hanoi Drainage and Environmental Improvement Project (Phase I),
- Assistance to air quality survey,
- Assistance to preparation of air monitoring program

(b) Workshops

- Attendance to JICA work shops related to her technical field.

3) Training program in Vietnam

The following program is recommended:

(a) Subject of training

Air pollution control planning and monitoring

(b) Training period

2000 to 2001 (intermittently)

(c) Manner of training

a) On-the-job training

Industrial Factory Inspection, Air Quality Analysis

b) Training courses, etc.

(d) Provider of the training

DOSTE

4) Overseas training program

Since Viet Nam doesn't has enough experience in the field of air pollution control and air monitoring, the following overseas training is strongly recommended:

(a) Subject of training

Main subject is to learn the air pollution control and air monitoring.

(b) Training period

More than 3 months

(c) Manner of training

a) On-the-job training

Lecture, guidance and inspection tour

b) Training courses, etc.

JICA group training course in Japan is instructive.

(d) Provider of the training

JICA or other international agencies

5) Assessment of his/her possible contribution to the implementation of Environmental Master Plan for Hanoi City (EMP)

(a) Relevance to the current job

Establishment and reinforcement of the monitoring system, recommended by EMP, as the priority projects is relevance to her current job of environmental management.

(b) Expected contribution to the implementation of EMP

She will contribute the following items to the implementation of EMP in cooperation with DOSTE:

- Assistance and advice for enforcement of air quality monitoring and inspection system,
- Leading for studies, planning of air pollution control measures.

HUMAN RESOURCE DEVELOPMENT PLAN FOR THE COUNTERPARTS OF THE JICA STUDY (No.3)

1. Personal History

(1) Particulars

1) Full name: PHAN HOAI MINH

2) Age: 30

3) Sex: male

4) Marital status: single

(2) Academic background

1) Name of school/university:

University of Karlsruhe, Germany: 8/1996-10/1998

University of Hanoi Architecture, Viet Nam: 8/1987-8/1992

2) Speciality/faculty:

Civil Engineering & Surveying Faculty

3) Degree

- Master of Science

(3) Working career

1) Current and previous organisations which he/she is attached to

(a) Names of organisations:

Hanoi Sewerage & Drainage Company

(b) Working periods: since 1992

2) Position and job description for each organisation

Deputy Head of Engineering Section

- Taking all responsibility of technical matters that relate to sewerage system and wastewater disposal development in the City
- Taking part in the company's projects, such as sewer rehabilitation and expansion
- Working with domestic customers and foreign experts
- Preparing reports for the Director
- Management functions

2. Rearing Plan

(1) Past training history:

Past Training 1;

1) Subject of training: Development of Water and Land Resources
2) Training period: 8/1996-10/1998
3) Manner of training: University Lectures, regular
4) (Including on-the-job training courses and site inspections, etc.)
5) Provider of the training
6) Name of organisations: German Academic Exchange Service under the Agreement between Germany and Vietnam Governments
7) Major outputs and relevance to the present job

- Master of Science in Water and Land Resources Development
- Improving current technical knowledge and getting more experiences
- Access to new and high technologies, applying for the job at home
- Contribute for the job at present: the implementation of urban drainage and environmental improvement project in Hanoi, especially for the phase I project (wastewater disposal in Hanoi City)
- Contribute for the environmental protection in Hanoi

Past Training 2;

1) Subject of training: Sewer rehabilitation planning
2) Training period: 11/1993-10/1994 as a counterpart of JICA Study Team (intermittently)
3) Manner of training: On the job training in Hanoi
4) Provider of the training
5) Name of organisations: JICA Study Team on Urban Drainage and Wastewater Disposal System in Hanoi
6) Major outputs and relevance to the present job

- Study on the condition of the existing sewer system
- Evaluation of the existing sewer system
- Selection of dredging and cleaning equipment for sewer rehabilitation

Past Training 3;

1) Subject of training: Water quality analysis

2) Training period: 10/1992-4/1994 as a counterpart of FINIDA Study Team (intermittently)
3) Manner of training: On the job training in Hanoi
4) Provider of the training
Name of organisations: FINIDA Study Team on Water Pollution Control Program under Water Supply Master Plan in Hanoi
5) Major outputs and relevance to the present job
- Water sampling
- On-site water quality analyser
- Water quality analysis at laboratory

(2) Necessity and direction of the training
1) Necessity
Method of sewerage planning, in general, is not established yet in Viet Nam from a viewpoint of water pollution control. At the present HSDC is concentrating on rehabilitation of the existing combined sewer system and flood control in corporation with the Drainage and Environmental Improvement Project. This project includes the pilot aeration facilities for lake water quality improvement and two pilot wastewater treatment plants. For next step, HSDC looks foreword to establish the comprehensive wastewater disposal system in the City and intends to encourage engineers for planning of sewerage and wastewater treatment plant.
2) Potential
His potential for training is assessed based on the experience and personal ability below:
- He is able to calculate basically hydraulic design of sewer,
- He understands fundamentally the biological wastewater treatment process,
- He grasps the condition of the existing combined sewer in the city,
- He is very interested in water pollution control,
- He is a promising engineer in a field of sewerage,
- He can play a important part as a co-ordinator between HSDC and JICA Study Team.
- He is used to work with foreigners.
3) Future career plan by the counterpart

He wishes to participate in the Phase I (Stage 2) of the Drainage and Environmental Improvement Project as an expert after this training with JICA Study Team.

4) Policy of the organisation for his future career, to which he is currently attached

HSDC plans to consolidate the Engineering section and the Science & Technique section and form the Science and Technique department. HSDC hopes that he performs a key part for wastewater disposal system at the new department.

(3) Rearing Plan

1) Basic direction and recommendations for rearing/training in the coming years

The following items for training in the coming year are recommended:

- General guidance on the O&M methods for pilot wastewater treatment plants to be constructed by the Drainage Project,
- General guidance on the methods for lakes water quality improvement to be constructed by the Drainage Project,
- Site inspection tour for the wastewater treatment plans in Viet Nam, for instance plants at factories and centralised plants of industrial estates,
- Lecture on planning and O&M of the comprehensive sewerage system in urban area, such as JICA group training in Japan,
- Site inspection tour for the sewerage system and wastewater treatment plant, such as Bangkok and Tokyo.

2) Training program in the JICA Environmental Study

Training program is described as shown in the working schedules attached hereinafter. Main items for training is summarised below:

(a) On-the-job training

- Grasping the progress of the Hanoi Drainage and Environmental Improvement Project (Phase I),
- Grasping the outline of the Ho Tay Project under Austrian Aid,
- Carrying out the study on public sewerage system in Hanoi with level of pre-F/S,
- Preparing an application form (TOR) for JICA technical assistance on the Feasibility Study for the Wastewater Disposal System.

(b) Workshops

- Preparation of workshop for the sewerage development plan,
- Presentation of the progress of the Hanoi Drainage and Environmental Improvement Project (Phase I) at workshop.

3) Training program in Vietnam

The following program is recommended:

(a) Subject of training

Supervising and O&M methods for pilot wastewater treatment plants and lakes water quality improvement facilities to be constructed by the Drainage Project,

(b) Training period

2000 to 20001 (intermittently)

(c) Manner of training

c) On-the-job training

Guidance and inspection

d) Training courses, etc.

Training course will be prepared by a provider.

(d) Provider of the training

PMB of the Hanoi Drainage and Environmental Improvement Project (Phase I)

4) Overseas training program

Since Viet Nam doesn't has enough experience for public wastewater disposal system, the following overseas training is strongly recommended:

(a) Subject of training

Main subject is to learn the planning and O&M of the comprehensive sewerage system in urban area.

(b) Training period

More than 3 months

(c) Manner of training

a) On-the-job training

Lecture, guidance and inspection tour

b) Training courses, etc.

JICA group training course in Japan is instructive.

(d) Provider of the training

JICA or other international agencies

5) Assessment of his/her possible contribution to the implementation of Environmental Master Plan for Hanoi City (EMP)

(a) Relevance to the current job

Projects to be recommended by EMP, especially the priority projects, are relevant to the following current jobs conducted by him:

- Planning and supervision of sewer rehabilitation and expansion,
- Assistance for dredging works of rivers, channels and lakes/ponds

(b) Expected contribution to the implementation of EMP

He will contribute the following items to the implementation of EMP in cooperation

with DOSTE:

- Assistance and advice for enforcement of water quality monitoring system,
- Assistance for implementation of projects on sewerage sector,
- Leading for studies, planning and supervising of water pollution control measures.

HUMAN RESOURCE DEVELOPMENT PLAN FOR THE COUNTERPARTS OF THE JICA STUDY (No. 4)

1. Personal History

(1) Particulars

1) Full Name: Tran Anh Chu

2) Age: 42

3) Sex: male

4) Marital Status: married

(2) Academic Background

1) University: National Economics University

2) Specialty/Faculty: Industrial Economics

3) Degree: Bachelor

(3) Working Career

1) Organization: Hanoi Authority for Planning and Investment (HAPI), 1993-present

2) Job description: international loan administration

2. Rearing Plan

(1) Types of Training Needed

Mr. Chu's training in economics is representative of a generation of students whose formal academic and on-the-job experience has been developed in line with Marxist economic thought. Now however there is a need for those responsible for dealing with bilateral and international organizations such as

OECF, JICA, the World Bank and Asian Development Bank, to understand those institutions' policies and requirements in the area of economic analysis. In particular there is a need to develop skills in Western economics as applied to project analysis. Failure to develop these skills will continue to be an obstacle to communication between bilateral and international donors and Vietnamese officials, and therefore reduce the absorptive capacity of the country in receiving foreign assistance.

In Mr. Chu's job in particular, such skills are required. He occupies a responsible position in HAPI, where understanding the basic principles of Western development economics in general and project analysis in particular, is necessary. His formal academic background is representative of other economists in government service, and therefore the comments made here about him in particular, are relevant, and thus even more important, for the general case. In selecting possible training options, Mr. Chu is also representative in that his command of English is not adequate and an intensive English training is indispensable.

The basic recommendation, applicable to Mr. Chu and to others in Vietnam occupying similar positions in government and with similar academic training is that they receive instruction in practical application of Western economics to real-world environmental problems. Obviously, some theoretical principles would have to be introduced, but the emphasis upon such training should be practicality and relevance. The topics that would command highest priority would be principles and application of project investment analysis and pricing and cost recovery issues as they relate to environmental programs and policies.

Investment analysis should be comprised primarily of cost-benefit and cost-effectiveness analysis, with emphasis upon discounting; externalities; distributional aspects; the distinction between social and economic costs and between economic and financial costs; and quantification of benefits. Based on the foregoing, pricing and cost recovery issues should encompass efficient pricing for publicly-owned or regulated agencies whose actions have major environmental consequences (e.g. energy, water, transport), as well as pollution

taxes, subsidies, and forms of compensation for environmental damage.

In view of (a) the language issue and (b) the unique circumstances of Vietnam, due to its transition to a market economy, such training should be specifically tailored to Vietnamese students. Also, emphasis should be on practical, rather than academic training for government officials who make economic decisions on a day-by-day basis. Therefore university style training is not recommended. Indeed, no examples are known of a training program that immediately would be useful for significant numbers of Vietnamese officials with environmental responsibilities to become acquainted with environmental economics.

(2) Training Provided by the JICA Study Team

During the study period in Vietnam, the Study Team gave Mr. Chu lectures on the following topics:

a. Evaluation of Solid Waste Management Costs

b. Economic Analytical Tool (Methods) for evaluation of investment projects

Outline of the lectures is given in the appendix to this section.

(3) Training Proposed

There are possibilities for such programs to be developed by the World Bank and Asian Development Bank. However, as far as the World Bank (World Bank Institute) is concerned, there have recently been a number of training courses which include some environmental economics in Vietnam, but funds may not permit more of such work devoted just to this country. Information about WBI courses in environmental economics and project analysis has been sent to Mr. Chu from Washington, along with a number of books and reports that should be useful to him.

The study team therefore recommends that external donors (such as JICA or OECF) consider the design of a specific program of training in applied environmental economics to be held in Vietnam, and aimed not only at economists, but also other relevant administrative or technical officials whose responsibilities have environmental objectives or implications. A similar

program (over four years, involving about 400 participants who each attended three week training courses) has just been successfully completed in China. This was funded by the UK (DFID), and is a model that is highly applicable to Vietnam.

Mr. Chu would obviously be the kind of candidate who would derive benefit from such a program.

Another approach that might be used to complement the above (but not applicable as far as Mr. Chu himself is concerned), is to train Vietnamese who themselves would provide practical training in the relevant skills. In this regard the World Bank Institute's Environmental Economics for Development "training trainers" program might be utilized. The main component of this program is a two-week course for about 25 participants from various countries. It contains:

1. Analysis of environmental problems
2. Setting priorities
3. Policy responses
4. Valuing environmental impacts
5. Deciding on policies and projects
6. Monitoring and evaluation

The course therefore makes use of economic principles in a practical way, and would be useful for Vietnam. A good background in Western economics and proficiency in English is required for participants.

HAPI has agreed to the above proposed training plan. Mr. Chu himself wishes to have a chance to participate in a 3 months- training program in a foreign county that contains both training in English language and analysis of economic efficiency of environment projects.

Appendix:

Outline of Lectures Provided by the JICA Study Team for Mr. Chu

A. Evaluation of Solid Waste Management Costs

1. Estimation of solid waste management costs

1) types of cost

- Investment cost (depreciation cost) – this tends to be under-evaluated in Vietnam.
- Operation and maintenance cost

2) Practical indicator for economic evaluation of solid waste management (SWM) cost

- Unit cost per ton of waste management:

  a. Total cost of SWM of URENCO: US$7,154,400 in 1999 including depreciation of equipment

  b. Total waste collected (1000 ton/day of ordinary waste + 300 ton/day of demolition waste/soil waste = 1,300 ton/day – 1,300 t/d x 365 days/year = 474,500 ton/year)

  c. Unit cost: $7,154,400/year / 474,500 ton/year = $15/ton

  d. According to URENCO/TUPWS: current cost of collection and transport is 86,391 Dong/ton = $6.2/ton !!! – very much under-evaluated. This means that total cost for collection and transport is $6.2/ton x 1,300 ton/day x 365 days/year = $ 2.9 million/year, while URENCO's expenditure in 1998 is $5.7 million. How the remaining cost is used for ? ($5.7 million/year - $2.9 million/year = $2.8 million)

- Ratio of SWM cost to per capita GRP (Gross Regional Product)

  a. Hanoi: 0.81% in 1999; going to increase to 1.25% when the planned transfer system and Nam Son Phase 2 sanitary landfill site starts operation in 2004

  b. General rule: The higher the income, the lower the ratio

  Low income country: 0.5 – 1%

  Middle income country: 0.4 – 0.7%

  High income country: 0.2 – 0.4%

3) Factors leading to high costs: Long transport distance to Nam Son and implementation of sanitary landfill --- Need to find landfill sites nearer to the city center.

4) Economic evaluation of waste incineration

2. Economic Analytical Tool (Methods) for evaluation of investment projects

1) NPV

2) IRR

3) Postponeability

Before doing the above, the costs and benefits must be estimated.

4) For the estimation, we need to know Opportunity cost, shadow price, marginal cost, marginal benefit

5) Ideal allocation of resource:

a. Marginal benefit deriving from investment of $1 of Project A = Marginal benefit deriving from investment of $1 Project B = Marginal benefit deriving from investment of $1 of Project C ...

b. Select project from the project of higher IRR

c. Select project with higher NPV per 1 dollar

HUMAN RESOURCE DEVELOPMENT PLAN FOR THE COUNTERPARTS OF THE JICA STUDY (No. 5)

1. Personal History

(1) Particulars

1) Full name: Nguyen Thi Thuan

2) Age: 52

3) Sex: female

4) Marital status: Married

(2) Academic background

1) Name of school/university:

Hanoi Architecture University: 8/1967-8/1972

2) Speciality/faculty:

Architectural Planning

3) Degree

- Bachelor of Architect

(3) Working career

Current and previous organisations which she is attached to

Names of organisations and job description for each organisation:

1) Department of Construction, Ha So Binh District (1972-1978)

-Work on the planning of trees, green space and parks in Ha So Binh.

2) Planning Division of TUPWS (1979-)

-Design and study of trees and parks in Hanoi and surrounding areas.

-Monitor and management of trees, lakes and parks in Hanoi.

-Responsible for the management of on-going projects on recreation, such as Hanoi Sports and Recreational Center Project and Yen So Park Project.

2. Rearing Plan

(1) Necessity and direction of the training

1) Necessity

To secure the recreational areas such as parks and lakes in the city is essential for citizens' living. Although the method of green and water area planning is not established yet in Viet Nam, rise in population and urbanisation is growing rapidly in the city. To avoid the serious environmental pollution in the central city, introduction of the highly established methods of urban planning should be carried out. Case study of the green and water area planning in the developed countries will be helpful for the planning of Hanoi City. Raising the recreational area planners is required especially in the rapidly developing city like Hanoi to save the quiet and comfortable living environment.

2) Potential

Her potential for training is assessed based on the experience and personal ability below:

- She has good experience in recreational area planning.
- She is very interested in recreational area planning.
- She understands the necessity to secure recreational areas.
- She grasps the present conditions of green and water area in Hanoi City.
- She is one of the responsible persons for recreational projects for Hanoi City which are in the planning stage.

3) Expectation for the Training

She wishes to receive the following knowledge through the training:

- How to improve the green trees and lakes in Hanoi and how to get the network of trees and lakes.
- How to deal with the different demands of each generation for recreational area.

(2) Rearing Plan

1) Basic direction and recommendations for rearing/training in the coming years

The following items for training in the coming year are recommended:

- General guidance on the planning and maintenance methods for recreational area.
- Site inspection tour for the recreational area in Viet Nam or developed countries. for instance field trip to the parks and lakes in HoChi Minh City or Tokyo.
- Lecture on urban planning and maintenance of parks and lakes, such as JICA group training in Japan.

2) Training program in the JICA Environmental Study

Proposed items for training is summarised below:

(a) On-the-job training

- Grasping the progress of the Study.
- Understanding of the ideas of urban planning in the developed countries.

- Introduction of methods of maintenance for parks and lakes in the developed countries.

(b) Workshops

- Preparation and presentation of workshop for recreational area planning.
- Participation for the Steering Committee Meeting.

3) Overseas training program

Since Viet Nam doesn't has enough experience for s, the following overseas training is strongly recommended:

(a) Subject of training

Main subjects are to know the cases in the developed countries on planning and maintenance of recreational area.

(b) Training period

More than 3 month

(c) Manner of training

a) On-the-job training

Lecture, guidance and inspection tour

b) Training courses, etc.

JICA group training course in Japan is instructive.

(d) Provider of the training

JICA or other international agencies

HUMAN RESOURCE DEVELOPMENT PLAN FOR THE COUNTERPARTS OF THE JICA STUDY (No. 6)

Hanoi Chief Architect Office (HCAO) is one of our counterpart organisations though they did not provide an appropriate expert for our study. This is the human development plan assuming that HCAO provides an urban planner who is useful for formulating environmental master plan for Hanoi City.

1. Expected Personal History

(1) Particulars
1) Age: 30's or early 40's
2) Sex: male or female

(2) Academic background
1) Speciality/faculty:
Urban Planning
2) Degree
- Bachelor or Master

(3) Working career

Counterpart is requested to have the experience that he had studied urban planning or urban development and worked in the fields of planning and conservation of green environment, water environment and cultural relics.

2. Rearing Plan

(1) Necessity and direction of the training
1) Necessity

There are relatively rich green and water areas in Hanoi City. Precious cultural and historical assets such as Ancient Quarter and old pagodas are also seen in the city. Although the methods of green and water area planning and conservation of cultural and historical assets are not established yet in Viet Nam, rise in population and urbanisation is growing rapidly in the city. To avoid disorderly development in the

central city, introduction of the highly established methods of urban planning should be done. Raising the urban planners, who can think about appropriate coexistence between development and conservation of the city, is required especially in the rapidly developing city like Hanoi to save the comfortable living environment and assets.

2) Expected Potential

- Counterpart has good experience in urban planning.
- Counterpart is very interested in urban planning.
- Counterpart understands the necessity to secure recreational areas and relics.
- Counterpart grasps the present conditions of green area, water area, and relics in Hanoi City.
- Counterpart has English ability to work with foreigners.

(2) Rearing Plan

1) Basic direction and recommendations for rearing/training in the coming years

The following items for training in the coming year are recommended:

- General guidance on the planning and maintenance methods for recreational area and relics.
- Site inspection tour for the recreational area and relics in Viet Nam or developed countries. For instance field trip to the parks, lakes, pagodas and museums in HoChi Minh City or Tokyo.
- Lecture on urban planning and maintenance of parks, lakes and assets, such as JICA group training in Japan.

2) Training program in the JICA Environmental Study

Proposed items for training is summarised below:

(a) On-the-job training

- Grasping the progress of the Study.
- Understanding of the ideas of urban planning in the developed countries.
- Introduction of methods of maintenance for park, lakes and assets in the developed countries.

(b) Workshops

- Preparation and presentation at workshop on the conservation of amenity area and relics.
- Participation for the Steering Committee Meeting.

3) Overseas training program

Since Viet Nam doesn't has enough experience for urban planning, the following

overseas training is strongly recommended:

(a) Subject of training

Main subjects are to know the cases in the developed countries on planning and maintenance of recreational area and relics.

(b) Training period

More than 3 month

(c) Manner of training

a) On-the-job training

Lecture, guidance and inspection tour

b) Training courses, etc.

JICA group training course in Japan is instructive.

(d) Provider of the training

JICA or other international agencies

HUMAN RESOURCE DEVELOPMENT PLAN FOR THE COUNTERPARTS OF THE JICA STUDY (No. 7)

This section shows a proposed training plan for a staff of Urban Environment Company (URENCO) who will serve as a superintendent of Nam Son sanitary landfill site.

1. Background

Through this study, the JICA Study Team has recommended that HPC/URENCO should apply a sanitary landfill at Nam Son, and conducted a pre-feasibility study for Nam Son Phase 2 landfill. HPC has applied open dumping method so far. HPC other Vietnamese cities have no experience in the operation of sanitary landfill.

In general, a landfill that has been designed and constructed as a sanitary landfill would easily turn out to be an open dumping landfill if the site is not managed and operated in an appropriate way.

It is highly recommended that URENCO will provide a professional training for a staff who will be a superintendent of Nam Son Landfill Site.

2. Qualification

It is desirable that the superintendent of the landfill site has a university degree in civil engineering or equivalent qualification, and experience of working as engineer or planner for 10 years or more.

3. Program Components Suggested

A training course for a superintendent of the sanitary landfill should cover the following aspects:

1) theory of sanitary landfill

2) structure and design

3) operation and management

4) cost management

5) practical solution of typical problems

6) site selection

7) intermediate treatment

The course should include visits to sanitary landfill of different types, in-class lectures and discussion.

4. Possible Training Opportunities

A training opportunity may be provided through Tokyo Metropolitan Government (TMG) that has already committed to implement a 5 years program of cooperation with Hanoi URENCO in the field of solid waste management. TMG plans to dispatch 5 SWM experts to URENCO. It is realistic and advisable that HPC should request TMG to provide some training opportunities for URENCO staff who is going to be a superintendent of the sanitary landfill in Nam Son.

Another training opportunities in this field are those offered by JICA. JICA offers the following two relevant programs every year.

(a) A JICA training program "Solid Waste Management" Its duration is about 2 months from May to July every year.

(b) A JICA training program "Solid Waste Management Technique" offered by Kita-Kyushu JICA training center every year. Duration is 3 months.

The latter program (b) puts more emphasis on technical and engineering aspects including those of landfill than the former program (a) does. The latter program includes lectures by Fukuoka University that has a good reputation and experience in scientific and technological research into the sanitary landfill.

It is strongly advised that the superintendent and some other engineers should visits landfill sites in other cities including Ho Chi Min City, Da Nang that have plans to implement sanitary landfill under the international technical and financial aids.

The reports of the JICA Study team contains the following relevant information:

(a) Volume 1 Chapter 6.5 Solid Waste Management Plan (Section 6.5.4 Municipal Waste Disposal Plan is especially relevant.)

(b) Volume 2 Chapter 7 Plan for Nam Son Phase 2 Landfill

JICA